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Readers Overwhelmingly Reject Licensing

By Catherine Arnst
Of the CW Staff

The overwhelming majority of readers responding to *Computerworld*'s licensing survey [CW, March 5] are opposed to the proposal that DP personnel be licensed as professionals.

In all, 72% of the 1,535 ballots received voted against licensing, with only 15% in support of the proposal. The remaining 13% didn't vote on licensing, but indicated the public needs some other form of protection from poor systems design.

The highest percentage of those supporting licensing appeared in job categories other than managers, DP managers and programmer/analysts. While these groups averaged 14% in favor, 21% of those outside these areas such as educators and salespeople supported licensing.

Most of the ballots had more than one category checked, as voters tried to explain or qualify the position taken.

For example, of those voting yes, 34% checked that licensing be conducted by professional societies, which would seem to support certification within the DP community rather than legislated professional licenses.

Of the total ballots cast, 13% supported control by societies, as opposed to federal licensing (7%) or state control (9%).

Another category receiving a large percentage of the vote was the statement, "I feel the public needs protection from poor systems design, but licensing is not the way to achieve that goal." Of the voters, 44% checked this category, including 7% of those who had already voted in support of licensing.

Public Protection

Judging by the comments accompanying the ballots, DP personnel consider public protection a pertinent issue and are concerned with controlling abuses in DP but feel licensing would have little or no effect on the quality of system design.

The final category, "Legislation should be passed only in areas where DP systems interface with the public, and the burden should be on businesses, not DP personnel, to ensure that systems are designed properly," was checked by 26% of the total voters, including 15% of those supporting licensing.

A recurring theme running through the comments is that DP personnel are only one part of a business and are responsible only to their employer.

It is, then, the employer who must be responsible to the public, these respondents said.

Had Reservations

Readers voting in favor of licensing showed reservations for the proposal, not only through categories they checked but also in their comments. These often tended to run along the line that licensing may not be the best idea, but it seems inevitable. As one voter said, "The handwriting is on the wall," and the DP community should either join in or get left behind.

Another opinion showing up regularly in the comments of those in support is the hope that licensing will weed out the bad and/or dishonest people in DP.

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FCC DP Inquiry Set?

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – With DP and communications technologies being drawn closer and closer together, pressure is mounting for the Federal Communications Commission (FCC) to reopen its Computer Inquiry.

The original Computer Inquiry was begun by the FCC in 1966 and lasted until 1971. It was designed to investigate the relationships between DP and communications and how the interrelationships might affect the regulation of communications services.

One of the primary differences between the two technologies is the way in which they are supplied to the end user. Traditionally, communications services have been regulated, while DP equipment and services have been provided in a competitive environment.

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VS2 Version 3 Also Released

Options Increase 158, 168 Speed

By Vic Farmer
Of the CW Staff

WHITE PLAINS, N.Y. – Hot on the heels of rumors that IBM has disbanded further development of Future Systems (FS) and that existing 370 systems would be enhanced came a relatively straightforward enhancement to the 370/158 and 168 last week.

On the hardware end, by doubling the size of the buffer memory in these two processors, IBM claimed most users will see increased internal speeds of 5% to 11% on the 158 and 5% to 13% on the 168.

Unfortunately, users expecting a better cost/performance ratio may be in for a surprise, for IBM has also increased the price of systems with this enhancement – 9% to 14% on the 158 and 7% to 11% on the 168, depending on memory size installed.

One industry observer summarized the enhancement by calling it "just another carrot that could help a user forestall an upgrade to a larger machine, but just for a short while."

Release 3

IBM also announced Release 3 of OS/VS2, and rumors abounded that, with this release, IBM salesmen can pick up cash bonuses as high as $2,000 when they convert any existing VS2 user to the new version. Normally, salesmen are compensated through a system of points accumulated over the year.

The 3158-3 and 3168-3 CPUs, as they are called, are available with the same features and main storage capacities as earlier units. Conversion to the Model 3 is said to require "little or no programming modifications," and currently installed systems may be field-upgraded.

The buffer on the 158 Model 3 is 16K characters instead of 8K characters, and the 168 Model 3 buffer is 32K characters instead of 16K characters.

The 3158-3 is said to also have enhanced console performance through the incorporation of an expanded data path from the operator console.

In a multiprocessing installation, a user may intermix 3158-3s in different main storage sizes, IBM added, and, for maintenance purposes, in such a configuration, the CPU, console and channels of one system can be powered down from its main storage, making that storage available for continued use by the other computer.

A new service processor on the 3168-3 can help simplify maintenance tasks by constantly monitoring and storing the most recent machine status information and by printing it for later diagnosis of machine failures or errors, the company added.

Share I/O Systems

Operating efficiency under OS/VS2 Release 3 is said to be improved by a new feature that permits up to seven computers in an installation to share the

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Doing More With Less

Crunch Hits State Computer Budgets

By Patrick Ward
Of the CW Staff

The current economic climate has put a lot of pressure on state DP installations to hold down or reduce their expenses and to postpone acquisition of new equipment as the experience of five states around the country shows.

A case in point is Arkansas, where 10 years ago only four state agencies were using computers, with total DP expenditures coming to $803,360.

Today, the Social and Rehabilitative Services Department alone spends about $1 million/year on DP, according to Dr. Roger B. Bost, director of that department.

When the legislature saw the state agencies' DP budget requests for 1975 to 1977, they decided "to put a lid on this thing" until they could understand how the money was being spent, Bost said.

The lawmakers set up their own commission to study current and proposed DP systems and recommend reorganization, elimination and expansion.

Until that group has made its report, probably at the end of this year at the earliest, a moratorium exists on major hardware acquisitions in Arkansas.

The delay may last well into 1976, Bost said, because the executive branch is developing its own Information Systems Plan "so we can make decisions about hardware needs more effectively."

The hold on equipment acquisitions is just a painful pill we will have to swallow to accomplish the goal we have," Bost stated.

Upgrade Plans Blocked

In neighboring Missouri, a legislative subcommittee blocked the revenue department's upgrade plans with a refusal to vote conversion money.

The state's economic climate was the reason for the negative vote, Rep. Gladys Marriott, chairwoman of the committee, explained.

Beyond processing taxes, the Revenue Department's Univac Spectra 70/45 systems store motor vehicle and drivers license files on mass-storage units.

The state highway patrol, police departments, the National

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Former User Sues Singer; Claims Software 'Fraud'

By Molly Upton
Of the CW Staff

DALLAS A former Singer System 10 user, Hi-Line Electric Co., has filed suit here charging the Singer Co. and Information Management Associates, Inc. (IMA) with fraudulently representing the capacity and capability of that system.

Hi-Line is seeking damages of more than $294,217, of which $71,717.04 are actual damages, in the suit against the Friden Division, Singer Leasing Co. and Singer's Business Machines Division, as well as Singer and IMA.

Singer had no comment, a spokesman said.

In its suit, Hi-Line alleged that not only was the full system never delivered, but Singer and its software supplier, IMA, knew that it did not have software to support the system's CRT.

In a letter to Hi-Line dated April 28, 1972, Robert P. English, marketing manager of Singer's computer division, described the system and its capacities, the suit said.

The initial system consisted of one Model 80 CRT, a Model 20 processor, a Model 52 line

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Please address all correspondence to the appropriate department at 797 Washington Street, Newton, Mass 02160. Phone (617) 965-5800. Telex 92-2529.

OTHER EDITORIAL OFFICES: Los Angeles: 963 N Edgecliffe Drive. 90026 Phone (213) 665-6008. **England:** Computerworld, c/o IDC Europa, Ltd., 140-146 Camden Street, London NW1 9PI. Phone: (01) 485-2248/9. **W. Germany:** Computerworld, c/o Computerwoche GmbH, (8) München 40, Fristanstrasse 11. Phone: 36-40-36/37. Telex. 5215350. **Asia:** Computerworld, c/o Dempa/Computerworld Company, Dempa Building, 1-11-15, Higashi Gotanda 1-chome, Shinagawa-ku, Tokyo 141. Phone. (03) 445-6101. Telex: 26792.

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President/Publisher	Patrick J. McGovern
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With Over 1,535 Responses In

CW Readers Reject Licensing Concept

(Continued from Page 1)

There was general agreement that the Certificate in Data Processing (CDP) exam as it now exists is not adequate nor respected enough to serve this purpose.

Several ideas reoccur with regularity in the comments of voters opposed to licensing. The biggest objection appears to be against government intervention, due to a mistrust of the government's abilities and the fear that the freedom and rights of DP personnel would be infringed.

DP Not a Profession

Another major objection to licensing is that DP is not a profession or else is too young to be considered one.

It was continuously pointed out that people in DP do not have the independence or standardized base of knowledge found in other licensed professions such as medicine and law.

Most members of DP are knowledgeable only in the area of business or systems they work on daily and have achieved this knowledge through varied routes such as on-the-job training, four-year computer science degrees and two-year technical schools.

This led to another common reservation voters held on licensing – the near impossibility of designing an exam comprehensive enough to test all areas of DP.

A common suggestion was that a separate test be designed for each area of DP and then be updated every year or so.

The feeling that licensing under such conditions could not be done, or at least done well, was the consensus in this area.

Self-Serving Concept

Another common reason for opposition was the belief that those in support of licensing only want to protect their jobs, keeping out anyone who might come up through channels other than a formal education. The complaint that licensing was a self-serving concept was made over and over.

Several voters also expressed the fear that the small user would suffer if licensing were introduced, for such users rarely need a full-time programmer.

Others felt that any test would be biased toward the giants of the industry such as IBM, Burroughs and Honeywell, consequently creating an atmosphere favorable to the growth of monopolies.

Version 3 Released: 370/58, 168 Option Offers Higher Speed

(Continued from Page 1)

Same input and output streams.

An incoming job, for example, can be processed on any computer in an installation, instead of waiting for a specific machine to become available, IBM said. This feature can help reduce operating costs by allowing several computers to share both the processing work load and a pool of peripheral devices such as printers and card readers, IBM said.

First shipments for the 3168-3 are scheduled to begin in June; shipments for the 3158-3 in September. Field conversions for "multiprocessing installations" will begin in December.

The 3158-3 rents for $40,670/mo (512K characters) to $61,780/mo (4M characters), which is $4,000/mo more than the older versions. The 3168-3 rents for $68,210/mo (1M characters) to $109,600/mo (8M characters) or $8,950/mo more than the older version.

Release 3 of VS2 is available now, and the old versions of the 158 and 168 are still available, IBM said.

Former 'Ten' User Sues Singer; Now Claims Software 'Fraud'

(Continued from Page 1)

printer and a Model 42 Split Disk. The system would be able to handle volumes "up to 6,000 customers, 2,000 inventory items, 100 orders daily and 40 employees," according to the letter.

The suit alleged this was not true and the defendants were aware of this.

"The system has the capacity and ability to process accounts payable, payroll and general ledger when so programmed," Singer told Hi-Line, according to the suit.

In August 1972, after the lease agreement was signed, the suit said, Singer told Hi-Line IMA "could not at that time furnish a computer program for a CRT but IMA was working on such a program for plaintiff and would have such soon."

Singer knew at the time of the contract it could not provide such equipment and computer programs, the suit charged.

Singer had told Hi-Line "only IMA could program the computer properly," Hi-Line relied upon this statement to its damage, the suit said.

In addition, Hi-Line charged Singer knew the system it was selling would not perform as promised and, further, that it could not deliver the CRT as promised and that other companies were better qualified, or as well qualified, to program the computer than IMA.

A year later, in August 1973, Hi-Line returned all the equipment, having never received the CRT, and demanded a refund of its money. The system was procured on a five-year lease/purchase plan.

IBM and Singer "acted together to fraudulently induce" Hi-Line to use their services when they both knew neither could provide the equipment and programming required to do Hi-Line's work, as they said they could, the suit charged.

No CRT

The crux of the problem was that without the CRT from which to input information onto the disks, the high-speed printer could not be used to generate invoices, explained Hi-Line President Jay Shaeffer.

Hi-Line installed two workstations which consist of slow typewriters, he said, and these had to be used for printing invoices.

This arrangement precluded inputting invoices during the day and running them out at night since the invoice data could not be stored from the workstations, he explained.

As a result of the hassles and aggravations, Shaeffer said he wound up in the hospital for a week with what was thought to be a nervous breakdown.

"We were promised 200% of our manual capacity with four pieces of equipment. We ended up with six pieces and still could not do our present workload."

The software was from a Stars package by IMA with some modifications, he said.

Hi-Line also was told that if its building was air-conditioned to temperatures comfortable for humans, no additional air conditioning would be needed for the machine. This, Hi-Line found, was not the case, as the CPU would get overheated and stop, he said.

Shaeffer had also investigated IBM and Honeywell systems, but chose Singer after it said it could provide a CRT system.

Currently Hi-Line has an NCR Century on order.

The charges in the Hi-Line suit include costs associated with physical requirements of the computer such as forms, disks, tapes, air conditioning and $941.41 for labor assistance during and due to computer set-up, delay and malfunctions, which totaled $9,765.88, Hi-Line said.

Payments to employees for overtime work and additional personnel totaled $14,139.80.

Hi-Line seeks punitive damages of $200,000 and attorney's fees. Hi-Line's attorney, John Griggs, noted under the Texas Fair Trade Practices Act it is not necessary to prove malicious intent.

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Licensing: CW's Readers Respond

On this page we have culled some of the more typical comments from the 1,500 responses to the March 5 survey, 'Vote Here for Licensing.'

•Against

MANAGERS

We have created enough societies whose main concern is not professionalism but protectionism, and DP licensing will certainly create another one of these. Who wants that?

CPUs will become easier and easier to use, comprehend and program – therefore I view this push as an attempt to proscribe jobs to a "jargon in-group."

How about licensing managers so we can get rid of the bad ones!

They issue a license to get married, but that doesn't mean it will work, either.

A friend of mine once had the *hot* water line connected to his toilet by a licensed plumber!

The idea of legislated standards of the nature of building codes provides visions of a bureaucratic nightmare so horrendous, programming costs so high and project times so long that no one with any amount of intelligence would want to join or attempt to employ the "standardized profession."

If management would accept its responsibility for the operation of this area as they do in other areas, then poor systems will disappear.

I believe the public needs protection from poor systems design, poor health, poor corporate earnings, poor weather, poor people, poor excuses and anything else that is poor. But until it gets something other than poor government, it should hardly be the government who licenses any professional group.

If, at some future date we *do* have to accept licensing, it should definitely not be a government-run operation. That would be the best possible way to screw it up!

Too often a license turns into a "license to steal."

PROGRAMMERS

If the purpose of licensing is to protect the public, it would defeat its own purpose – those clever enough to commit crime via computer systems would surely be clever enough to obtain a license.

Perhaps many of us would like to be world-savers and right wrongs, fight injustice, etc., but the career of programmer or DP specialist is not the way to do it. DPers who want to accomplish political or social ends will have to work through political or social institutions. We are not going to be handed police authority over our employers by licensing – only the ability to take the blame.

I consider programming more of an art than profession, and as such it does not need licensing. Or are artists licensed?

Why pick on one part of the business community? If you are going to require licensing of DP personnel, why not require all people from company president to office boy to be licensed?

Licensing is, in my opinion, a means by which a select few will enhance their own status. No No No.

I recently had the privilege of observing a coworker "studying" for the Certificate in Data Processing (CDP) exam. "Studying" consisted of memorizing questions and answers from past tests. He passed the exam – he is now a "professional." He was incompetent before the exam and he is still incompetent.

We need state-enforced standards in our (sometimes) creative profession like biology needs another Lysenko.

If you're good at your job, then you don't need a license. If you're no good, then a license may help you . . . not the public or your company.

OTHERS

This is the stupidest question ever, and who in hell cares?

Licensing seems like a pretty shoddy excuse to spend money and receive nothing.

The best protection is an informed public.

The DP "profession" is, in actual practice, a multiplicity of professions which, for the most part, fail to affect the public to a degree implied by the questionnaire.

Colorado is in the process of licensing massage parlor operators. Licensing DP people will probably have about the same effect – none!

The free market will weed out poor systems design.

DP MANAGERS

What next? Malprogram insurance?

I do not want any federal control over licensing. If anything, we need more control over the federal!

The majority of DPers are gnomes. Licensing will only serve to protect them from being discovered and removed.

The next step would be to limit input to the profession so as to keep salaries artificially high. After all, if we're to model ourselves after lawyers, doctors, etc., let's go whole hog.

Perhaps the politicians should be licensed first.

It is high time DP personnel start identifying with their employers and users and stop perpetuating the myth of professionalism.

I have been in DP 32 years and I think the idea of licensing is for the birds. I would not have 95% of CDPs within 100 miles of any installation I was running.

Only a few will benefit – they are only concerned with personal gain. Give them an honorary license, let the rest of us go about our work and let management select the best . . . Time will tell.

My impression is that the push for licensing is mainly by those who have gotten in the door and want to replace the door with a tended turnstile to retain some control over the job supply.

A license only suggests competency. Many more newly licensed drivers are involved in accidents than are old experienced veterans. Forget that piece of paper – give me experience.

I haven't read one good reason *for* – yet!

Let's face it – performance is the only way to win the user's support. The job is just creative enough to ensure that no amount of learning automatically ensures success. Results are the only measure.

The tempest is due to your efforts to arouse interest in your paper. If you did not make much ado about so little it would soon fade away.

Any company in which the management cannot screen who it hires except by exam is incompetent.

Licensing does nothing more than provide employment for bureaucrats. Education is the answer.

My licensed doctor failed to detect a breast cancer which my wife found herself two weeks later, my mother-in-law's licensed lawyer robbed her estate blind, a licensed lab technician caused an infection in my wife's arm when drawing blood for a test, my licensed dentist snapped a root during an extraction and I had to go to a dental surgeon to get it out of a sinus cavity. License?? Humbug!!

The idea that one group of people should impose its ideas and standards on everyone else is as repulsive today as it was during the Inquisition.

Licensing my dog does not mean he isn't going to bite somebody.

Licensing is just another way of unionizing. It would be of primary benefit to only a few, but detrimental to the public good.

DP will not be professional until we get rid of those in DP societies who are only there on ego trips. These are the last people in the world to determine what and who are professionals.

You get enough little empire builders together and some self-defined virtues, sprinkle vigorously with ego, add a wallet full of greed, start passing laws, get the federal and state governments to back you with their courts, and of course legal police action when necessary, charge fees, more money, more laws, more control, and alas, the super empire.

This license would be unfair to all small users who do not have a full-time programmer on their payroll.

Incompetent people in any position or department in a company are a direct fault of management abdicating to the employees one of its basic functions, namely to manage.

If you think things are bad now, turn it over to a government agency and you will find they are very efficient.

Just took the CDP exam. That is *not* a means of determining eligibility for license, in my opinion.

Ridiculous.

Who will license the licensing committee?

Licensing is ordinarily reserved for those who have at least a modicum of independence from those they serve. Employees in DP have very little independence.

Shades of 1984?

Self-control and/or normal free enterprise pressures are more effective than big brother approaches to control.

This sort of licensing would be like anything else, dependent upon whom you know and which friend took the test ahead of you – you could easily pass.

Educational bigotry in any profession is crappy.

What the profession needs is more good people, not more certificates. Many of the people involved in Watergate were licensed to practice law, but this did not protect the people in that affair.

All this talk of professionalism is a joke. Computer programmers and engineers are grunts. They are completely dependent upon the whims of their respective managements. They have had a terrific con job pulled on them – to compare them with doctors and lawyers who are essentially self-employed is silly at best. It's almost as stupid as identifying them with their companies. The companies of America are money machines in the hands of their management cadre. Everyone else is a production tool which must be cost-accountable, of course.

On-the-job training, relevant courses and the opportunity to use what is learned would seem enough to those who really *care* – and that's the key. If I don't care, a license won't improve my work.

•For

The CDP is inadequate. Anyone of reasonable intelligence can obtain it by simply studying one of several good review manuals. If we can't do it alone, it's time for federal help.

Any line of endeavor which aspires to be considered a profession and which has no provisions for licensing is doomed. It's not a matter of whether to license, but of how and who will do it.

Licensing may help to contribute a more professional attitude in our business. We need more public respect, and this may help us get it.

I like the idea of a license as a social reward for acceptance of responsibility. The technique of CDP qualification is not optimized; however, it accomplishes some culling of good DP people.

Licensing will protect companies who hire DP personnel as it does the companies who hire lawyers, civil engineers, heavy equipment operators and truck drivers.

There is a real need in many areas of our professional dealings with users, employers, clients, etc., to offer some independent evidence of credibility and proficiency. I'd sooner be a licensed professional than a card-carrying journeyman.

Nothing is going to solve all the problems. In any solution there will be bugs. But licensing combined with certification is a practical and workable facility.

DP is a profession no different from engineering, chemistry or medicine. A DPer should be recognized as a professional and be thrown out for wrong-doing, such as thievery.

Since the CDP is not recognized by anyone, not even the DP community, we need something to make the general public realize we spend a major portion of our career studying and keeping abreast of all technical innovations.

We need real professionals, not just anybody who worked his way up from the mailroom or graduated from college. The line must be drawn between the doctor and the quack in our industry, and professional certification is the only way to do it.

As busing is probably not the most desirable way to achieve integration, it's at least the best alternative currently available; similarly, licensing may not be the most desirable way to achieve and maintain high and consistent standards, but, it's a first step.

The majority of the problems I encounter in DP are the results of incompetents who have duped an unknowing public into believing they are professionals. Licensing would not eliminate this 100%, but it would help to control the problem by setting standards and screening out most of the great pretenders.

There are apparently more people who do want a Big Brother Sam than don't; so, if licensing is to come about, I hope the specifications are laid down by professional DP people rather than politicians.

I believe we need both certification and licensing. The sooner the better! There are too many charlatans around who claim to be knowledgable in DP – let's weed them out.

If the DP profession does not set license standards and goals, the government will have to intervene.

Licensed DP personnel should certify system design.

There is very little "computer error." There is a great deal of input error, programming error, analysis error and, unfortunately, deliberate error.

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Pressure Mounts on FCC to Set Inquiry

(Continued from Page 1)

But increasingly gray areas are developing, wherein the one technology depends on the other to provide users with a service. As a result of this interdependence, the FCC may have to more accurately define the limits of regulated services.

Although the issues are complex, the basic jurisdiction for an FCC proceeding relates to two specific areas. The first is the emergence of the packet-switched or value-added carriers, and the second is the IBM proposal to enter the satellite service field.

The Hybrid Question

In its first Computer Inquiry decision in 1971, the FCC defined hybrid services as those having both DP and communications portions. At that time, the commission said if the service was primarily communications in nature, with incidental DP, it should be regulated. And if a service is primarily DP in nature, with incidental communications, it would not be regulated.

Operating under these guidelines, the time-sharing vendors have traditionally operated free of all regulation. The crucial test of these companies has been the fact that their communications lines are transparent and required only to provide DP services to their customers.

But from the inception of the packet-switched vendors, the Commission has assumed these are value-added carriers. This means packet-switching is a DP technology that has been added to a service that is primarily a communications capability.

This premise has recently come under close scrutiny. Several government agencies, including the President's Office of Telecommunications Policy and the Antitrust Division of the Justice Department, have indicated that users would benefit if the value-added carriers were deregulated. Presumably, the FCC would have to reopen the Computer Inquiry before it could come to the same conclusion.

IBM and Satellites

In its recent IBM/CML satellite decision, the FCC said any IBM satellite involvement would have to be kept totally separate from the IBM DP sales effort.

It based this finding on an interpretation of the 1971 Computer Inquiry decision. But, it added, "our conclusion should not be construed as precluding a reevaluation of the principals and policies underlying our Computer Inquiry, should the public Interest require such reevaluation in light of IBM's entry and participation developing satellite technologies and increasing interdependence between computers and communications services."

Industry observers feel it may be impossible for IBM to separate the DP and communications aspects of a satellite offering. They point out that the term "teleprocessing" (coined by IBM) clearly encompasses both technologies. Thus far, IBM has not divulged its exact plan for satellite service. It might just be waiting for a signal that the Computer Inquiry might be reopened.

In the meantime, the FCC would be hard pressed to engage in a detailed look at DP at this time. Members of the commission staff have limited knowledge of DP users and their habits.

Such information and other DP-related information would be essential to the FCC staff. Without it, the staff would be unable to make DP-related recommendations to the commission.

But sources close to the staff acknowledge that the DP area is becoming increasingly important, and it may be planning to acquire some DP expertise from consultants outside.

Economic Crunch Felt in State Computer Centers

(Continued from Page 1)

Crime Information Center and Federal Bureau of Investigation all make inquiries against these files, said Mike Burris, a department spokesman.

"We can't add that much more to the Spectras; we run three shifts/day, and they're booked," Burris stated.

Additionally, the old RCA mass-storage units were never designed for high-speed, on-line inquiries, he said. "There could be a breakdown this summer that would effect a lot of law enforcement people."

However, the legislature did vote money for the department to send work out-of-house during its busiest seasons, Marriott said.

The Revenue Department is willing to install a smaller Honeywell system and to proceed modularly from there on, Burris said. But until the legislature votes conversion money "it's difficult for us to do anything but stand and shuffle our feet."

The DP budget situation in Wisconsin "is the most severe we have ever experienced," Leonard J. Leckie, director of the state bureau of data processing, said.

The state is analyzing further equipment consolidation as one possible means to provide better DP service without rising costs, he said.

Wisconsin's three main DP centers might absorb five or so smaller ones, he stated. Or the state might just set up two fairly large centers instead.

"Productivity is the name of the game in Wisconsin and a lot of other states now," Leckie said.

Michigan has cut each department's budget by 2% for this operating year, Paul E. Roscher, assistant director of the Bureau of Management Sciences, said.

DP managers here also have to contend with a ban on out-of-state travel (unless it generates revenue for the state); a 10% cut in in-state travel; and a hiring freeze for all but essential services.

Virginia state agencies are taking a 3% reduction, according to Charles Emswiller, assistant director of DP.

There's no personnel freeze yet, just "a high level of control." The state is also looking at longer term leases and showing more interest in independents' equipment, he added.

The state also expects that its new Univac DMS 1100 data base management system will save on the programmer time.

New York state has been a leader in third-party CPU leasing, Robert E. Scharg, said.

Scharg, director of state computer systems development, listed this as one of the state's current cost-saving measures. Others include sharing use of CPUs whenever possible, removing old applications that have outlived their usefulness and selectively pooling equipment needs to come up with larger volume orders for suppliers.

However, California's Steven B. Teale Consolidated Data Center has so far escaped the budget ax. "I haven't noticed any difference; it's always been tight," Director Ira B. Isbell said.

Even so, he said, the center is thinking of using paper on both sides and writing programs to print at eight line/in.

IBM SEs, Salesmen for Catamore Witnesses in Suit

By Molly Upton
Of the CW Staff

PROVIDENCE, R.I. – Catamore Enterprises, Inc.'s attorney Thomas K. Christo has changed the order of witnesses in the firm's suit against IBM charging fraud and misrepresentation [CW, March 19].

Instead of examining his expert witnesses, Christo called Catamore President Robert S. Catanzaro to the stand.

The move followed two weeks of questioning IBM personnel attached to the Catamore account, during which Judge Raymond J. Pettine repeatedly dismissed the jury to quiz Christo and his witnesses on the relevance of his line of questioning.

Pettine reiterated his lament that Christo was "putting the cart before the horse" and reminded him the jury had not yet heard a description of the damages for which Catamore is suing IBM.

Get the grievances on the record, and then use testimony of experts, he said. "You don't have on the record that Catamore's computer system didn't produce results," Pettine added.

IBM originally filed suit against Catamore, a 360/20 user, for nonpayment of bills. Catamore is countersuing.

Basics Settled

Several matters basic to the conduct of Catamore's case were settled in the first week.

One of the decisions made by Pettine, seen as crucial to Christo's line of questioning, was to admit verbal agreements for systems engineering (SE) services made between Catamore and IBM following a September 1968 contract for machine services.

IBM's outside attorneys from Edwards & Angell had objected to the admissibility of such material.

Acknowledged Verbal Agreements

After more than two hours of questioning by Christo, M.C. Davitt, the initial IBM sales representative to Catamore, acknowledged verbal agreements had been made pertaining to SE services.

In addition, a compromise was reached regarding submission of work papers compiled by Catamore's auditors, Arthur Young & Co., for inspection by Price Waterhouse & Co., an accounting firm retained by IBM in this case.

Rough Outline

In a rough outline, which doubtless will be refined by Catanzaro's testimony, Catamore ordered a 360/20 before the days of unbundling, in September 1968. The unit, originally scheduled for delivery in late 1969, was delivered in June 1970. IBM salesman Davitt was replaced on the account by Vincent O'Reilly Sept. 1, 1969, and systems engineer Kenneth Racette took over the Catamore account from his predecessor Thomas Brassil in the summer of 1969.

Catamore had agreed with Davitt for certain SE services, as it had no DP experience or personnel. Multiple SE agreements ensued starting in December 1969, and a 360/25 was ordered in March 1970 and delivered in April 1971.

Salesman O'Reilly testified that, upon receiving the Catamore account folder from predecessor Davitt and after having discussed the account with Davitt, he discarded Davitt's handwritten notes. He said he did not confer with Brassil on the account.

Racette, the second systems engineer assigned to Catamore, also testified he had received the contents of Brassil's folder on Catamore, which consisted entirely of handwritten notes.

Racette gave the impression that, rather than adhering closely to systems designs created by Brassil, he had held further discussions with Catamore management to "discuss with the customer what was left to be done."

Despite intensive questioning, Racette declined to give a definition of his interpretation of the meanings of "detailed systems design" and "general systems design."

Two Levels of Systems Design

Both Racette and O'Reilly acknowledged there are two levels of systems design, one a general outline and the other more specific. Not until the second step has been completed can programming be done, they admitted.

On Nov. 19, 1969, O'Reilly sent Catamore management a letter in which he said, "Support in the following areas was mutually agreed prior to June 23, 1969: production control, inventory, order entry, invoicing, accounts receivable, accounts payable.

"Thus far, the system design for production control has been 90% completed with the remaining accounting application systems to be designed."

O'Reilly said he had been informed by Racette that work on the production control area was 90% completed. Racette testified that, although the term "systems design" is ambiguous as used within the industry, and that he has "a problem defining general and detailed systems design," the term was not ambiguous with regard to Catamore. "They understood what we were doing."

Racette also said he never talked about "detailed system design," as such, but instead discussed with Catamore management what was encompassed and explained the process.

He turned over documentation of the systems design for production control to Catamore in December 1969. This consisted of flowcharts and narrative, about 20 pages; a couple of sample reports; and some work on contents of files.

The letter from O'Reilly also explained aspects of unbundling: "In Mr. F.G. Rogers' letter of June 23, 1969, we advised our customers that SE support would be provided on a charge basis under our agreement for IBM systems engineering services. We also stated that charges for systems engineering services rendered prior to Jan. 1, 1970 would be waived for those services which were mutually planned prior to June 23, 1969."

"We mutually agreed that IBM would assist and guide you with systems engineering support in planning and implementing the above applications. Although we can assist you in these areas, ultimate responsibility for the results and completion of the system is beyond our control and rests with your company."

O'Reilly said he recommended that Catamore defer delivery date of its 360/20 16K system from late 1969 to March or April, since, in September, when he took over the account, there was not enough time to complete software tasks that needed to be done.

Three Unions Down Under Organizing All DP Levels

By Nancy French
Of the CW Staff

SYDNEY, Australia – The quest for professionalism, recognition and collective representation for DP practitioners has spread to Australia, where three separate unions are seeking to organize computer industry employees from keypunch operators through senior analysts.

About 15,000 programmers and systems analysts plus another 15,000 data preparation staff members working at an estimated 2,600 computer installations are involved.

In the first known major effort to unionize DP practitioners, the Federated Clerks Union (FCU), a non-DP union, claimed DPers are merely high-powered clerks. The FCU has presented a "log of claims" to the majority of corporations, vendors and DP service organizations throughout the country.

While the FCU's claims might be true for coding clerks, critics here maintain the FCU's view could scarcely be extended to cover systems analysts, professional programmers or professional accounting staffs.

At the coding level, programmers may warrant a clerical classification, employers opposed to the FCU's contention said. But, as a programmer acquires more responsibility, his work becomes more judgmental in nature and he becomes less of a clerk.

The FCU has proposed salaries as high as $40,000 for senior analysts.

Professionals-Only Union

The Australian Computer Society (ACS) with its own version of a Certificate in Data Processing (CDP) examination as a requirement for membership, has endorsed the concept of unionization for professional DPers only, in line with results of a survey of its members on the question.

As a result, ACS President Ashley Goldsworthy has established what he described as an "appropriate" counter association for computer programmers and analysts to block the action of the FCU, according to a recent report in *Computer Weekly*.

The organization would be called the Association of Computer Professionals, Australia (Acpa).

Although one would have to be a member of the ACS in order to be a member of Acpa, participation is open to others through an affiliate status.

Thus, programmers who have become an associate of the ACS but do not have the two years of experience required for membership in that organization could become affiliates of Acpa, the article noted.

Goldsworthy said the society had "dealt with a very complex problem in a very short time and had arrived at an attitude which would prove of great benefit to its members."

Finally, a third organization, the Australian Data Processing Employees Association (Adpea), a subsidiary of the Technical Services Guild of Australia, is attempting to enlist members of the DP populace.

And so, at last report, three different unions have begun to recruit DP members in this country in the face of "stunned silence" from most employers, according to *Computer Weekly*.

Unionizing Aussies Bad Business Move

By Kenniston W. Lord Jr.
Special to Computerworld

For the Australian data processor facing growing unionization efforts, the choice is a simple one. The question is not whether there should be a union – it is merely which union to select.

The Federated Clerks Union has gone into court to enforce its "log of claims" against 31 Australian corporations. The court outcome is not expected for nearly a month, but one thing is certain – before too many more weeks have passed, data processors across the continent of Australia will be unionized.

One possible consequence is that log claims could be presented with the entire union going out in support. Since Australian unions are not generally directed at a specific industry, such a strike could bring the wheels of industry and government to a halt.

Analysis

Two months ago, for example, 60 power laborers held an entire populace captive, shutting the power off three times a day until their demands were met.

As I write, the bank tellers are about to go on strike, with banks warning that a strike will prevent people from making any financial transactions.

Thus, a nation is brought to its knees by a dissident few.

Of a population of 13 million, 10,000 – or .0008% – are data processors, compared with .0011 in the U.S.

The cost of computing will escalate geometrically as companies face double and triple overtime rates necessary to get the job done. The answer will not be to simply hire more DPers, as there are literally no more to be had.

And, since the country is run by a labor government committed to full employment, DP technical people can no longer be recruited from the overseas pool that supplied them in the past.

An era will emerge where union rules will require a licensed electrician to turn on and start the computer system, where union clerical people with fancy titles will be handling I/O gear manned with one person to a unit, where factory workers using data collection devices will demand to be classified as "computer operators."

Like any pie-eyed scheme, it has its fatal flaw, however. That flaw will be paychecks. The same union that will shut down the channels of DP commerce will demand to be paid.

One Australian conglomerate that recently lost its payroll system just before wages were to be paid obtained $50 bank notes for all employees to tide them over a weekend. This required lengthening the Friday afternoon shift by 30 minutes.

As a result, the unions started a three-day wildcat strike the following Monday, demanding double-time pay for Saturday.

They won, and the government approved. Such is unionism in Australia, and the DP people who didn't have the commitment to stand up and stop it will have helped it along.

Lord, president of the Society of Certified Data Processors, is currently traveling in Australia.

Editorials

Impacting Privacy Abuses

The abuses to personal privacy that can result from computerized data banks have been documented for some time. One overriding aspect of such cases is that the abuse is identified after harm has been done – usually to the record or reputation of an individual.

But a recent proposal by the Association of Data Processing Service Organizations (Adapso) may have uncovered a method to prevent potential abuses before harm actually results.

Adapso has suggested privacy impact statements be prepared before mass data banks are set up. These impact statements would identify both the negative and positive effects of the proposed data bank on individuals and society at large.

The impact statement has been a fundamental tool of the Environmental Protection Agency (EPA) since it was established. Before a decision can be made on major projects, the EPA must prepare an objective evaluation of possible environmental consequences.

A statement of impact is then prepared and interested parties, including the public, may participate in the proceeding. The process is conducted in much the same way as regulatory hearings, and it has been at least moderately successful.

Congress is presently considering future policy in several areas related to privacy. The lawmakers may establish a federal commission to oversee the area of privacy.

If such a commission is established, the built-in protection of impact statements should be included.

The potential for abusing our right to privacy of information is increasing. It is no longer sufficient that abuses are identified after someone has been harmed.

A privacy impact procedure administered by an impartial government agency is probably the best method yet devised for handling this serious problem.

EFTS Moratorium Needed

Members of the DP community should join the congressional forces now urging a delay in the implementation of electronic funds transfer systems (EFTS).

DP people know only too well that policymakers and others in power too often rush headlong into computerization projects before the full consequences of such systems are studied.

This happens with poorly thought-out systems in the private sector as well as in the public sector, but the effects of public systems are often more noticeable or devastating to the public at large.

EFTS is such a system – one that will touch a substantial number of people and one that will have great nontechnical consequences for users at all levels. It has the potential to change the way we bank and handle money.

A commission has been established to study the entire range of issues raised by EFTS and is expected to report its results within two years. But at the same time, several banks are already implementing EFTS, and such implementation could short-circuit the commission's work.

Because of this, several thoughtful Congressmen have urged a moratorium on EFTS until the results of the commission's studies are known.

DPers should join them and urge their local representatives to support the moratorium.

'Bless You, Sir!'

Letters to the Editor

End to DP Isolation Can Come Only With 'Hard-Nosed Clout'

I appreciated reading Lewis Copley's reader commentary [CW, Mar. 19] on DP isolation for its thoughtful and pretty much on-the-money conclusion that we are our own worst enemy.

Trouble is, what he portrayed is but a symptom or manifestation of the basic problem.

For example, Copley cited our lack of "knowledge about corporate direction and proposed objectives." To this, I would like a show of hands: How many systems and data specialists, including our top cats, have ever been entitled or invited to sit in as observers or, better, as participants in the general staff meetings of the corporate unit? Damned few, I am sure.

In our attempts to achieve that elusive status as professionals and executives, we have failed to recognize it is the illogical and abnormal organizational reporting arrangement, usually under the financial aegis, which is our most serious obstacle!

We and our errant professional societies must concentrate on getting our specialty brought organizationally alongside finance, engineering, manufacturing, industrial relations and marketing. Until these other functions become peers instead of betters, nothing will change.

This elevation from our functional isolation will be accomplished through hard-nosed clout and leverage. Until then, all attempts at "communicating" will be one-sided, and in a vacuum at that.

Tom O'Connor
Santa Clara, Calif.

Median, Modal Salary Different

The article in the March 19 issue entitled "Median Systems Pay Rises 12%" contained the following sentence: "While the respondents with up to three years of systems have a modal [median] salary of just under $17,000 . . ."

This sentence implied the mode and the median are the same thing. The modal salary, however, is the most frequently occurring salary, while the median salary is the middle score of all salaries.

For example, in the set (1, 1, 1, 2, 3, 4, 9) the modal score is 1, the median score is 2 and the mean score is 3.

Jerrold L. Dykstra
Oaklawn, Ill.

We were also confused by the report's use of these terms, but when we checked with the Association for Systems Management (ASM), the author of the study, we found it uses "modal" and "median" interchangeably. Ed.

Shop's Problem Solving Important

The March 12 article, "Small Bank Division Sets Up Its Own Mini Center," misquoted me as saying "what was of high priority to the division did not seem crucial to the data center."

This was incorrect. I said the minicomputer system was our way of solving some of the problems that faced us. The data center's personnel are involved in major systems work that utilizes their available resources.

From the First National Bank of Atlanta's standpoint, the problems we solved were of less importance as compared with the problems being solved by our DP shop.

J.F. Trimble
Assistant Vice-President
First National Bank of Atlanta
Atlanta, Ga.

They Don't Know the Lingo

In an article about some programming consultants called the Merlin Group ["Money Making Minor Concern of Hobbyist Consultants," CW, March 12], there was a sentence which I fear many of your readers will find incomprehensible:

" 'Carter tells us how to do it, Fouts tells us whether it can be done, and I make it run faster,' Stubbs said."

Now any true DPer could have told you this should read: "Carter, Fouts and myself constitute an integrated analysis-oriented systems team; Carter implements the primary interaction with the problem/solution interface, dynamically coordinating with the systems-implementation feasibility analysis implemented by Fouts; after these preliminary implementations have been implemented, Stubbs implements a time minimalization-oriented approach to the final systems integration."

No wonder them boys ain't made no money yet – they can't talk DP!

James Walker
Metuchen, N.J.

Proper Perspective

Herb Grosch and his periodic tirades regarding IBM were put into their proper perspective years ago in Ayn Rand's *Atlas Shrugged*.

Denis E. Ables
Vienna, Va.

Honeywell Maintenance Available

I enjoyed the article, "Used Equipment Mart Active in Penny-Pinching '70s" [CW, March 26]. However, I feel that the statement, "Honeywell 1200 CPUs are available at 5% to 20% less than their original cost," should have been corrected to read "5% to 20% of original cost."

And I don't believe readers should be left with the impression that it is expensive or impossible to obtain Honeywell maintenance. It is merely more difficult than with IBM.

John Allen
Oliver Allen Corp.
Sausalito, Calif.

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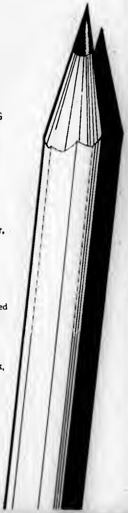

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Letters to the Editor

Sarcasm Unjustified; Tree Crop Did Fail

In spite of Herb Grosch's sarcastic disbelief in such a possibility [CW, Jan. 8], the tree crop did fail in a sense last year.

Pulp wood has a much shorter growing cycle than hardwood and is grown in the Mississippi Valley and Canada. Last year, floods damaged quite a bit of pulp wood in the Mississippi Valley.

In a few years, much of this land may go over to growing food, so paper may continue to be tight or get tighter. This has obvious implications for computer output microfilm (COM) and CRT output (where hard copy is really not required).

I have no particular love for the paper business, but I think they are being somewhat unjustly maligned.

Susan Lewis
Waltham, Mass.

Consumer Groups' Job

The intense controversy over point-of-sale (POS) installations in recent months concerns me. What especially concerns me are the "consumer groups" that threaten to force legislation denying one of the basic economies realized by POS technology, the ability to discontinue price marking each item in the store.

It is very clear the consumer does not need legislative protection. If he is not satisfied that the store is charging the correct prices, he won't go to the store.

Of course, the response to my theory will be that the consumer is not intelligent or patient enough or well-enough equipped to determine whether he is being charged correctly. Even if this were true, there is a much better solution to the price-marking controversy than making it illegal not to price mark each item.

Legislation could be enacted making it illegal to charge a different price than is shown on the shelf. Then consumer groups could show how truly committed they are.

Certainly consumer groups have the patience and intelligence and are well-enough equipped to check out the supermarkets they so readily harass.

Dale A. Henn
Melville, Mont.

Why Ignore Grocers?

The recent CW editorials concerning point-of-sale (POS) systems lead me to believe CW knows nothing about POS. Why doesn't CW talk to someone in the supermarket industry who knows POS advantages and disadvantages, instead of talking with consumer activist groups and other publicity seekers?

Don Moore
Oklahoma City, Okla.

Computerworld welcomes comments from its readers. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

Bound to the Wheel

One of the major arguments in the wrangle about licensing – perhaps the touchiest, for it involves pride as well as position – is whether computer people are professionals. I mean professionals in the fancy sense: like doctors and lawyers and engineers holding the state professional license. There are licensed "professionals" of a lower type (beauticians, say) who might better be called just licensees, and there are journeymen like plumbers. Both these trades serve a supervised apprenticeship, and even where classroom training is involved, it does not compare in either breadth or depth with the university years required of an actuary or forester, let alone a medico.

My own view has been that in addition to special expertise and an organized (and frequently exclusive) guild, a profession should have an ethical standard *and should enforce it*. Moreover, I believe most members of a profession must be self-employed: must have the freedom to say "no."

Computer people are very slowly developing an ethic. In the U.S. and in Britain, the first steps have been taken. Mechanisms for enforcement are notoriously absent – even expulsion from the professional society is not mandatory – but at least the need has been recognized.

Where we fail, along with the foresters, most actuaries and CPAs and almost all engineers, is in freedom to refuse. We are employees, not free agents. We look at dentists, and say with Lear, "Thou art a soul in bliss; but I am bound/Upon a wheel . . ."

To put it bluntly, when the boss says, "Jump!", most of us have to. We don't think up those nasty interest gimmicks ourselves, or make unchecked access to arrest records possible from any terminal, or falsify life insurance dossiers, on our own. We do it to the specification of our employers, sometimes explicitly, sometimes as a consequence of orders to save money.

A doctor or lawyer or freelance CPA may indeed do unethical things, but because of individual greed or weakness – not because he has to obey orders.

Susan Lewis, writing in a recent Association of Computer Programmers and Analysts (Acpa) newsletter, says it pungently: " . . . to be held responsible for professional conduct people must have enough executive authority so that they can decide that some application or method of implementation is wrong and then have enough clout to get requirements changed or veto the project. Right now the average programmer/analyst or DP manager can use whatever eloquence they may possess in persuasion but their real alternatives are not nearly so broad. I oppose the licensing of technicians (which is what most of us are, let's face it) for the apparent purpose of holding them responsible for the decisions made by their bosses' bosses."

Right on!

First let's concentrate on strengthening our guild so that a member can say "No!" Better ethical standards and better tests and certifications are being developed; what is needed is protection for those with the courage to refuse ugly demands.

Herb Grosch

And Avoids 'Unnecessary Tangles'

Recognizing User Limitations Prevents DP Headaches

The Taylor Report

By

Alan Taylor, CDP

Users are important people to DP managers. Without them, DPers would have nothing to do – and that would soon lead to disastrous unemployment. So users certainly have to be cherished and cared for.

This does not mean, however, DP people should accept everything a user says at face value. Even the most sincere user may be mistaken – or may not have thought through what he is saying. DPers can get into quite unnecessary tangles by not realizing the limitations of users.

Historically, the reason we are inclined to give so much weight to users' opinions is that most of our systems analysis functions have developed as part of a computer selling function. When systems analysis is handled as an adjunct to selling a computer and when the customer says he will buy the computer only if the payroll slip is printed in braille, that can become a requirement of the computer vendor's analysis team.

But that is not a user's requirement. It is simply a customer requirement. And the two are not the same thing at all.

Customers can be unreasonable – but users should be made to be reasonable. And making them reasonable is part of a DP manager's job.

Document Justifications

The first place user weakness occurs in the systems operation is in the analysis itself. Most system's analysis documents are full of lists of "user requirements" These have been developed from interviews with prospective users and are written in almost exactly the way the user said them to the analyst.

But, far too often, there is absolutely no justification for the "requirement" included in the document. If an item is really a user requirement, the user should be asked to explain why it is required, as opposed to being desired. And this explanation should be recorded as an integral part of the systems analysis.

Without these explanations being recorded alongside the so-called user requirement, the requirement gets set into concrete. The user later forgets why he wanted something, and, if asked, tends to make up all sorts of excuses. The analyst takes the requirement for granted and never asks himself whether it is really necessary.

As a result, the DP operation loses flexibility unnecessarily. All because the DP people did not realize that the user, while knowledgeable, is not infallible and because they did not record his reasons for requiring certain items.

No Free Lunches

Another failing in the analysis phase is the implied right of users to get what they want – without regard to costs either now or in the future. Everything in this world costs something, and DP is no different. If a user adds requirements to a system, he should be made aware and kept constantly aware of his contribution to the cost of writing and operating the system.

Personally, I think most of the accounting systems that handle DP expenses are very poor, but, even without one at all, some sort of feedback should be forced upon users. This would show them the one-time and running costs of their requests.

And these feedback details should also be included in the systems analysis documentation, along with the explanations of the requirements the user has asked to be included.

Users Aren't Time Travellers

After the systems analysis function comes the systems development. Here again, the DP people simply fail to realize that users are human, too. A user's estimates and statements about what will and will not happen in the future are questionable, to say the least.

The system under development is new – and no one has worked with it yet. No one, therefore, can be certain as to what will occur. Yet, in systems development, we often see user statements being accepted at face value, even though they are simply forecasts of the future.

This is nonsense. It's no good developing a system without realizing these things may change and allowing for change. User statements here should be limited, and the more important they are, the less they should be trusted. Users know less about DP potentials than DPers do in many cases.

Systems in Use

When systems are in use, again, users are often less knowledgeable than they appear to be on the surface. Typically, users are inclined to treat the running of application systems as being routine if everything goes all right and as being the sole fault of the computer or the DP department if things are not going correctly.

Neither view is particularly true, of course, but both have one similarity – they assume the user is the person who knows whether the system is behaving as planned. And this is just as fallacious as the other ideas about user knowledge, because users often don't know what is happening until it is too late to do anything constructive about it.

Typically, a user only hears of the problems that are reported and are not regarded as being routine problems. He doesn't see the impact of the routine problems on the integrity of the files until months or years after the files have become less and less valuable.

He doesn't see the importance of the fact that more and more people are finding ways to go around the computer or are ignoring certain reports. He is concerned with the day-to-day problems he must solve immediately – not about the ones that are not, apparently, important at the moment.

And so the standard reliance of DP people upon him as a first-level warning system simply doesn't face up to the facts of DP.

Unless you think selling computers is all there is to DP. I don't.

Reader Commentary

Advisory Body Can Bridge University-Industry Gap

By B.D. Sorrell

Special to Computerworld

Discussions on whether colleges and universities are teaching what needs to be learned in business DP have been under way for almost a year now.

For those educational institutions concerned that their programs may not be producing the kind of business DP graduate needed by business and industry, a DP advisory committee can be a useful tool.

Whether the school has never utilized such a body or has allowed it to lapse into a "paper" committee that performs no active function, the following guidelines may be helpful.

Certainly not a new concept, an advisory committee may be concerned only with the inauguration of a program or it may serve established programs on a long-term basis.

Initially, the body can guide and assist in converting the needs of the community into a valid program of business DP education. After the program has become well established, the function of the committee changes to one of updating and maintaining the program through identification of the needs of the individual and the community, assessment of labor market requirements, participation in developing community understanding and support and development of long-range goals.

The committee's membership should be drawn from the entire occupational range represented in the program; however, it might also have as members individuals from other groups of interested and concerned laymen.

Local DP advisory committees can provide a college or university with a variety of services and activities, including: assisting in student recruitment, selection, placement and recognition in the instructional program itself; keeping teachers up-to-date in industry events; and handling public relations for the school's program.

In the area of student recruitment, the committee can encourage young people to consider DP education and training by visiting "feeder schools," making speeches to civic clubs, holding career-day meetings and so forth. It can also assist the college or university by counseling students who apply for admission into the program.

Committee members can help the school select students for its DP program by participating in the development of aptitude tests and by providing information concerning desirable aptitudes, education and experience background which applicants for entry-level jobs should have.

To prepare students for placement upon graduation, the committee can arrange field-trip visits for students and counselors, provide vocational-guidance literature to teachers, counselors and students and assist and participate in surveys of local industry manpower needs.

Helping Graduates

Not only can the body help place students in part-time work during the school year or summer vacations, but it can take an active role in placing graduates in industry jobs.

By providing scholarships and other financial assistance for outstanding graduates who wish to continue their education and training and prizes to outstanding students, the advisory committee can also encourage the growth of business DP in colleges and universities.

By assisting in the development and review of course content, committee members can assure its currency in meeting the changing skills and knowledge of the industry.

They can develop apprenticeship and on-the-job training opportunities for the program.

Preparing and reviewing budget requests for equipment and supplies; evaluating physical conditions, adequacy of equipment and layout of computer centers; and obtaining needed school equipment and supplies on loan, as gifts or at special prices are also legitimate functions of the DP advisory committee.

The committee itself can establish and maintain a library of visual aids, magazines and books related to DP. And the development of special educational and training programs conducted with funds made available by governmental programs and of evening skill-improvement and technical courses for employed personnel should also interest the advisory body.

Summer Employment

In addition to coordinating field trips for teachers in DP programs, the committee might also arrange for their summer employment in industry and conduct clinics and in-service and out-service training programs as well.

As in the case of students, the advisory body might help establish teacher qualification requirements and provide awards and prizes to outstanding instructors.

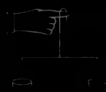
The committee could further assist teachers by arranging meetings of teachers to establish cooperative relationships between the schools and industry, by providing substitute or resource instructors from industry to assist regular teachers and by paying industry organization membership dues for teachers. The body might also provide funds to enable local teachers to attend regional and national meetings of industry and teacher organizations.

Public Relations

Finally, in the area of public relations, the DP advisory committee can provide speakers to address trade and civic groups concerning the industry's education and training program in a school. It can also make news stories concerning such programs available to magazines published for specific industry groups, the local news media and company publications.

Committee members can participate in radio and television programs designed to inform the public about DP education and attend meetings called by local and state school officials, boards and legislative groups in support of such training.

Sorrell is an instructor and department chairman in DP at Kilgore College, Kilgore, Texas.



In Choosing Outside Packages

Measuring Potential Benefits Basic Part of Process

By Don Leavitt
Of the CW Staff

HARTFORD, Conn. – Few question the wisdom of making a detailed evaluation of how packaged software works and a careful mathematical comparison of several packages that seem capable of doing a job when looking for outside programs, according to Charles Lupien.

But there is an even more basic consideration, the analyst from Combustion Engineering, Inc. told attendees at a recent Computer Caravan here.

Lupien urged his audience to ask whether the software, if purchased, will give at least one of the following benefits.

- Avoid development costs.
- Improve performance.
- Prove easier to use than an in-house program.
- Conform with installation standards.
- Increase productivity.

If the user can't honestly be positive the outside package will meet any of this range of potential advantages, there isn't any point in going further, Lupien said.

As a rule of thumb, he noted purchased software costs anywhere from one-third to one-tenth as much as equivalent in-house development, especially if the package is well established with costs of enhancements – and input for them – coming from a solid base of users.

Eight Basic Steps

There are eight basic steps in the actual selection process and, though many have appeared in other "how-to-do-it" lists, they are probably worth repeating, Lupien said, adding his approach might also include some elements others have not considered.

The installation must know its requirements – mandatory and desirable – almost before it starts its search for outside help. Unless a user has a target, he said, there's no way of knowing if any of the products that are available meet the site's needs.

"Once you know what products are available, perform a matrix evaluation – matching product capabilities to requirements, weighting the results first by the importance of the requirement and then by the cost of the package," he went on.

Obtain user references from the potential vendor and contact them before making any final decision. Ask as many hard questions as you can, he said, to find out if the other user's situation really is comparable with yours. Learn what you can expect from the vendor in initial training and in on-going support and training if the package is installed, the workshop was told.

Do a benchmark on your own equipment, Lupien urged, to determine true processing speed, overhead and other performance elements in light of your workload. That's where you plan to use it; that's where you should try it, he said.

'Track Record'

Any user looking at substantially priced packages should certainly get bids from several vendors, he reminded his listeners, and consideration of the vendors' "track record," current financial stability and future potential is legitimate.

Even though most vendors have their own "standard" contract or license agreement that looks simple and straightforward, it should be reviewed by the potential user's legal counsel – before it is signed. Some licenses are too vague, Lupien said, while others are overrestrictive.

An open discussion between lawyers can, in many cases, lead to a clearer understanding of existing contract language or to preparation of additional terms and conditions that leave all concerned satisfied. The important thing is to recognize the acquisition is a legal, binding transaction for both parties, he said.

Even when the selection process is complete and the package installed, the user should follow up the implementation – after whatever seems to be an appropriate period – to be sure it is working as expected. And to go after the vendor if there is a problem, Lupien concluded.

'Foresight V,' 'Foretax' Updates Support Critical Financial Areas

LOS ANGELES – Corporate officers dealing with two critical financial areas may be able to solve their problems with updated versions of two products from Foresight Systems, Inc. (FSI): Foresight V, a modeling and management reporting tool; and Foretax, which handles corporate state income tax systems with factors for each jurisdiction maintained by FSI.

Foresight V is keyed to user-defined arrays which can be changed at will to answer "what-if" questions about the using corporation's financial situation.

Production and manpower analyses, financial plans, budgets, variance reports, corporate models "and virtually any management analysis" which show results in a matrix of lines and columns are typical uses of the system, FSI said.

Iteration, looping and forward and backward modeling are possible through a set of conditional branching routines. Data can be entered by columns or at any node of the line-column matrix. Other commands allow Foresight applications to use data from other files or to provide input to them, a spokesman added.

Foresight V is said to contain the capability to generate graphical plots and to perform complete consolidations, loan amortizations, depreciations, present value, discounted cash flow and rate of return studies. Statistical forecasts may use seasonally adjusted or unadjusted data; he said.

Stand-Alone Application

The Foretax package is a specific application of the Foresight language capabilities. It is a stand-alone system, however, and does not require concurrent implementation of Foresight V at the user site.

Foretax provides compliance facilities – by generating all appropriate state-level corporate tax returns and backup schedules – and "what-if" facilities comparable with those in Foresight V itself. With these planning capabilities, users can check out the effect of a potential acquisition or change in corporation structure.

Written in Fortran, these packages can be adapted to almost any in-house CPU. They are also available on commercial remote-computing networks.

Object code for an in-house implementation of Foresight V, designed for a 85K DOS partition or a 120K OS region on IBM gear, is available for a one-time charge of $22,500 or under various lease/rental plans.

Foretax costs $10,000 for the first year of a five-year lease and lesser amounts in the following years.

FSI is at Suite 583, 1901 Avenue of the Stars, 90067.

'Pronet' Backs CPM, Pert Uses

TOLUCA LAKE, Calif. – A project planning and monitoring system for project networks (Pronet) is now available from Occidental Computer Systems, Inc.

Designed to operate on systems with Fortran IV and Cobol capability, Pronet generates a bar chart of activities against three optional time scales – days, weeks or months, the firm said.

The project manager can utilize such planning techniques as the critical path method, or Pert, or he can process free-format plans with the option of updating these automatically, the company added. Once project plans are established, all progress and projections are reported to the system through a time sheet for automatic update.

The system also produces a budget report for analysis of project dollar status.

Pronet can be obtained for $260/mo or for a one-time purchase of $6,000. The company is at 10202 Riverside Drive, 91602.

Tape Spooling, Queue Handling Featured in 'DOS Asap' Update

DANBURY, Conn. – IBM 360/370 DOS users, with or without Multiprogramming Support, can store output for slow-speed devices on disk space and move it to the final output units later with Version 3 of the DOS Asap spooling package from Universal Software, Inc.

The release is said to provide performance improvements of 5% to 10% over its older versions, partially on the basis of rewriting of old logic. But Version 3 also includes several new capabilities such as tape spooling, Universal noted.

Improved queue management includes an ability to have executing programs direct output to spool files for imaginary devices when the real ones are busy. It also allows the user/operator to interrupt an ongoing print or punch job to retrieve the imaginary device spool files on demand if, for instance, he knows it has a higher priority than the work that was interrupted.

Other new features include optional report separators, in which job names in 4-in. letters are printed on header pages between reports, and user accounting exits, in which operators are able to check against job control to be sure a job about to be processed is, in fact, a valid job.

Abbreviated operator commands and dynamic queue polling – under which DOS Asap immediately checks other spooling files for material to be handled once the printer or punch completes its current work – are also part of the new packaging, Universal said.

In addition to basic spooling features, DOS Asap's facilities include immediate device start, partition independence, job accounting support and partition balancing, the spokesman added.

Distributed free to current users of DOS Asap, Version 3 is available to new users from $2,900 for a 36-month license.

Universal is at 136 White St., 06810.

At last. A system that puts transaction processing first. DECcomm 600.

Until now, transaction processing has been a secondary feature of most computer application systems.

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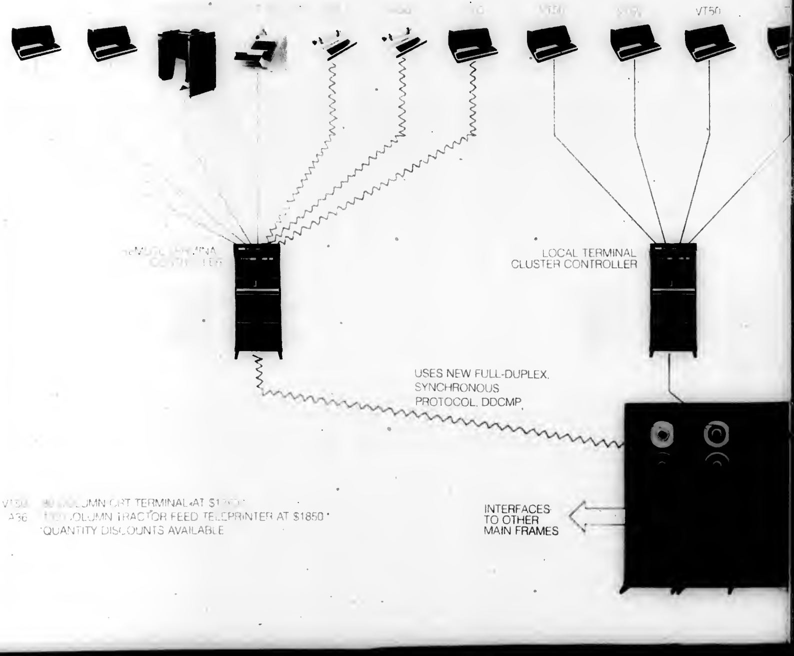
We did it by extending the power of our real-time, data based RSX-11D system with a comprehensive hardware/software communications package.

DECcomm 600 uses a multiprocessor technique. Now communications interrupt processing time that would be required of RSX-11D is handled by a second processor, a concentrator, using a communications executive to maximize throughput.

Handling all the communications for RSX-11D frees it to do what it does best – real-time, interactive, and batch processing. Simultaneously. Whenever and



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Up to four concentrators can be located anywhere in your transaction processing network for control of local or remote terminal clusters, remote batch entry or regional dial-up activity, and much more. DECcomm 600 is transparent to applications software, so programs are written as if terminals were connected directly to the host system.

Handling transaction processing with Digital minicomputer technology optimizes applications throughput. And with complete systems ranging from $75,000 to $450,000, terminals included, you get direct cost savings in the bargain.

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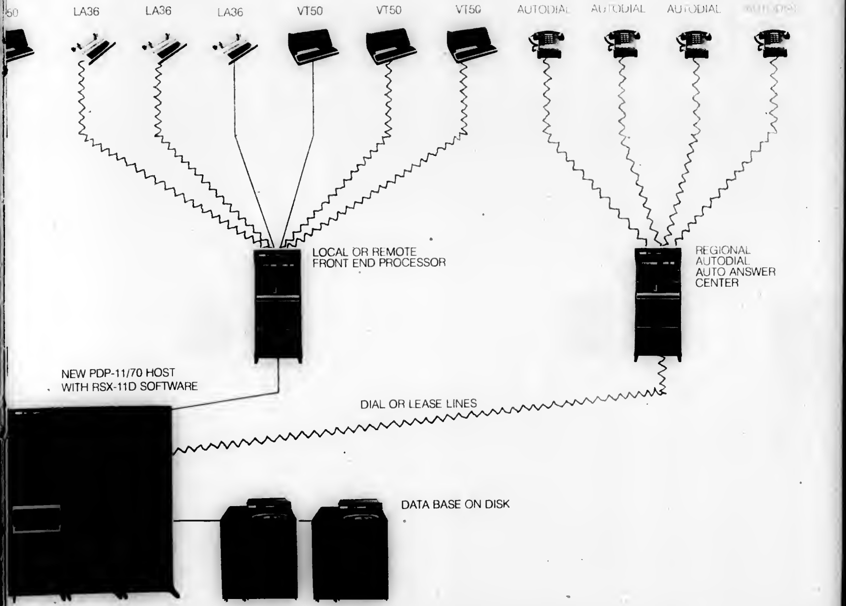


Designed for Users, Vendors

Questionnaires Can Prevent Undesirable Purchases

By Patrick Ward
Of the CW Staff

NEW YORK – "It's almost impossible to get rid of a software package once you've bought it" because someone chose it and decided to pay for it.

Instead, the undesirable package just sits there, getting less and less use, W. Donald Stanford, software evaluator for Doubleday & Co., told a recent Computer Caravan session here on "Evaluating Application Software."

To prevent that kind of waste, Doubleday relies on a centralized DP control group who use questionnaire forms to make sure a user needs a package and that the vendor's product can do the job successfully.

All new DP requests go through a DP coordinator. As software evaluator, Stanford decides which vendors should remain in the evaluation pool, keeps a file on vendors and makes recommendations on whether to buy a package or write the software in-house.

A hardware evaluator performs the same function for the firm's DP equipment, which includes an IBM 370/168 under OS/VS and a 360/65 under MVT.

A project controller and a quality control staff concerned with standards and documentation also work under the DP coordinator.

Advantages and Disadvantages

Forms have a disadvantage – people don't like them – but "they provide an organized way of doing the study, and you tend not to miss things or leave holes," Stanford said.

Doubleday based its system of user and vendor questionnaire forms upon Bennet P. Lientz's "Guidelines for the Acquisition of Software Packages," No. AD-782-477 from the U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Va. 22151.

Questions for users include: "What is being done in lieu of . . . the package? Is it measurably inferior to what the package will do?"

The user form also examines the tangible and intangible benefits of the package, what would happen to the user if it failed to perform, expected frequency of use, employees and unit responsible for its use, resource requirements and interfaces to other systems.

The user questions also ask about testing, installation, modifications and contractual conditions and provides a list of questions to ask the vendor's current users.

Vendors Doubleday is considering get a form requesting general information on the package, with specific questions on contracts, installation, documentation and support.

The form also asks about testing, the package's hardware and software requirements and requests a list of users.

The form gives Doubleday a written record of "how the vendor answered, what he answered and whether he answered," Stanford stated.

Both types of questionnaires help Doubleday avoid duplications in software procurement, centralize control of its DP activity, mark out responsibility and set down follow-up techniques, Stanford remarked.

Educate User

For the technique to work well, users have to know enough about DP to answer the questions posed to them, Stanford said. If not, then "you just have to educate the user" in DP, he said.

Another point to remember when dealing with a user about software packages is that "too often people who order software don't have an idea where the company's configuration will be in three years."

Tool Lets DEC PDP-11 Create Intel Program

SILVER SPRING, Md. – Users with access to a Digital Equipment Corp. PDP-11 can develop programs for Intel 8008 and 8080 and DEC MPS series microprocessors with a Cross Assembler from Innovonics Corp.

The program runs under the DEC RSX-11 operating system. It produces a paper tape for programmable read-only memory (Prom) production, a hex format tape for use with the Pro-Log Prom Programmer and a binary load format tape for program loading into the DEC MPS system, the vendor said. Output listings are in hex or octal notation.

The package is distributed on various media for $1,500 from Innovonics at 14119 Castle Blvd., 20904.

SMM Offers 'Stop'

SACRAMENTO, Calif. – The Storage Protector (Stop) package developed by On-Line Software International to provide a safe test bed for an IBM Customer Information Control System (CICS) application [CW, Aug. 21] is now being offered hy Software Module Marketing, 1007 Seventh St., 95814.

Packages Efficient Alternative to In-House Software

By Naney French
Of the CW Staff

PHILADELPHIA – The practice of developing all software in-house is beginning to change now that users are realizing the efficiency, convenience and savings to be gained from utility software packages available on the market, Donald J. Mickey, assistant vice president of the Provident National Bank, told Caravan attendees here.

Many DP managers "have not considered packaged software in the past because it's difficult to review packages objectively" when comparing them with an ideal, customized, in-house proposal, he said. Mickey noted this is particularly true "if the project leader plays an important role in the make-or-buy review.

"Packaged software often requires extensive modifications to make it work" as effectively as something a user could develop in-house. But when faced with little time to implement a system for processing on new equipment, the user often can't wait.

Within four months, Value Computing, Inc. installed a job accounting system for Provident National that would have taken about 36 months for the bank's systems development team to make operational, he explained.

Converting to OS

In 1971, a decision was made to upgrade the Provident National Bank's computer center from a DOS tape-oriented operation with 10 machines to two IBM 370/145s operating under OS/VS1 and one 360/30 operating under DOS. About 5,000 programs had to be converted to OS.

As we gained experience over a 12-month period converting the first 1,000 programs, it became apparent "the other 4,000 programs would never be converted according to our schedule," Mickey said.

But "since we had placed so much effort on the conversion of all our programs to OS and a new teleprocessing installment loan system, we had neglected to evaluate the hardware, virtually ignored the technical training of the programming staff and paid little attention to optimization through utility software, he added.

We soon realized "our general programming staff was not being trained to use all the tools available through OS for maximum effectiveness in writing programs. The teleprocessing system was using 50K for little subroutines that should be taking 4K," he said.

In addition, "our systems programming staff was too small to carry out its main task, and the new equipment did not provide sufficient computer power to carry out our primary function as a service organization for the bank," he explained.

Following a review by Auerbach Associates, Inc., "it was recommended that our conversion be turned over to someone else. The work was actually four times the original estimate, and it was taking three times as long."

Changes Made

Changes had to be made, Mickey said, and the first was to place an order for a 370/158 to replace one of the 145s. The second was to shift the main responsibility of converting programs from the overburdened systems programming staff to the much larger development staff, and to increase the programming staff by 25%.

At the same time, we started an education program, initially for systems analysts, dedicating one-sixth of their time to it. The program included workshops and seminars using commercial educational packages. In the meantime, the programmers were assigned to maintain the old system.

The systems programming department's responsibility was shifted to supporting the systems software, carrying out hardware evaluation, assisting and training other departments and finally controlling all teleprocessing applications.

Three years later, by late 1974, all programs had been converted to OS, and we had started an educational program for the whole staff. We also had reviewed major applications with the goal of reducing run time and eliminating as many manual steps, such as tape mounts and operator intervention, as possible.

Program Review

The systems programming staff started an extensive review of the programs, both batch and teleprocessing, running in a production mode.

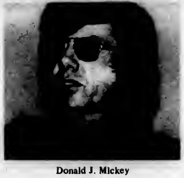
The staff identified the need for utility software for program monitoring and a librarian for storing programs and updating changes in addition to maintaining a tape library.

"Approximately six packages, ranging from program monitoring through job accounting, were purchased at a relatively low cost, and these were very quickly installed compared to building such programs with our in-house personnel," Mickey noted.

"Now the programming staff can concentrate on improvements and optimization of both the software and hardware, and look at new applications such as on-line programming, other utility packages and installing the Cobol optimizer and IBM's fast sort merge 1," he said.

Looked Good on Paper

"The Provident started with a very ambitious conversion plan which, at the time, looked excellent on paper. Everything occurring in the areas of budget and quality of service to our customers was completely revised," Mickey remarked. "Buying utility software packages has freed our systems programming personnel to spend more time in the areas that were missed in the original OS conversion proposal."


Donald J. Mickey

While commercial packages are not really as inexpensive as people say they are, they are cheaper than in-house development, he said. Although the literature says the cost of installing a utility package is one-tenth to one-fifteenth the cost of building it in-house, we found that it cost more like one-half as much," Mickey concluded.

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Why three monitors? No one monitor can serve all users without being grossly wasteful for some, while being significantly inadequate for others. Obviously, the user with a few terminals performing simple inquiries requires facilities different from the user with hundreds of terminals performing complicated on-line updating with a data base manager. Customizing a "do everything" monitor simply cannot produce an optimal system. That is why we offer three monitors. Each of our monitors is uniquely suited to—specifically designed for—a particular environment. Each the best!

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- There are more than 200 installations using our monitors. We have an established track record for efficient, reliable, effective systems.
- Our monitors offer the *most* features. This means substantially lower cost to you when you use our *monitor-provided* services rather than *your own programming.*
- Each of our monitors has special features designed for your environment, and that makes them unique from other systems. These unique capabilities make our systems clearly superior.
- Our monitors have been frequently chosen to replace installed systems using other monitors.
- We provide the best possible DB/DC environment. We offer integrated support for ADABAS, IDMS, Model 204, DL/1, TOTAL, CFMS, AMIGOS, as well as an interface package for user-written or other data bases. Support for other data bases will soon be available.
- Programming Methods offers a complete array of product support services from offices around the country and around the world. Our support includes extensive documentation, professional instruction, videotape courses, highly capable specialist system engineers and over 1000 data-processing professionals available for any systems and programming services.
- A Programming Methods monitor is the only monitor ever to make the Datepro Honor Roll.
- Our first system was installed six years ago. Literally hundreds of system-years of experience have resulted in reliable, stable, efficient products.

MINICOMM. MINICOMM can put the smallest user on-line quickly. Simply. *No hardware upgrades.* It can operate with the simplest DOS supervisor, without requiring multiprogramming. And it operates highly effectively under DOS/VS. It does not require BTAM. It offers complete mapping support for 3270's and stores screen formats separately from application programs. MINICOMM efficiently supports conversational processing. Programs are easily written in COBOL, PL/1, BAL or RPG II. Automatic print spooling is provided for CRT-associated printers. Complete protection against program failures is provided by a special purpose cancel trap and recovery feature. With MINICOMM you will be on-line in literally a few days.

BETACOMM. This is the ultimate communications system for DOS and DOS/VS users. It offers the high performance and full facilities to implement an advanced and efficient system previously available only to OS users. It is a fully-queued, multithreaded system supporting Assembler, COBOL and PL/1 programs. It features full-screen mapping support and an automatic screen paging facility. Conversational processing is made simple with a SAVE/RETURN feature. It offers complete error recovery facilities and a unique on-line testing facility that affords complete program isolation—a test program cannot bring down the production system. Additionally, BETACOMM uses its own overlapping loader and has a complete security system.

INTERCOMM. INTERCOMM is the most advanced tele-processing monitor available. It is designed to provide peak efficiency and maximum throughput in OS and VS environments. INTERCOMM offers the most advanced and complete DB/DC environment available. INTERCOMM offers the most comprehensive system integrity that totally integrates recovery of data base, OS/VS files and TP messages and queues. INTERCOMM offers device-independent support for over thirty different terminals. This support includes comprehensive error recovery logic (the coding users must provide in other monitors). Many of our users have chosen INTERCOMM because the system software provides for automatic implementation of so many facilities that must be user-programmed in other monitors. These complete features include a unique multiregion version that permits on-line testing without imperiling the production system, and provides absolute security and integrity for each of the various on-line systems. Other features include a table-driven file display and maintenance utility, many important VS performance features, message switching and broadcasting, screen mapping, multiscreen browsing, extensive performance and statistical data, and a complete charge back accounting system.

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Dr. Paul S. Nedler is Professor of Business Administration at Rutgers University and faculty member of the Stonier Graduate School of Banking. He has authored two books: Commercial Banking in the Economy and Paul Nadler Writes About Banking. Additionally, Dr. Nadler is a consultant to the Banking Department of IBM, and is the Director of the IBM Advanced Industry Banking School.

GUEST SPEAKER BANQUET – APRIL 23

Professor Richerd L. Nolan has lectured and written extensively in the field of computer-based systems. He was formerly a Systems Analyst for the Office of the Secretary of Defense, and a Management Simulation Engineer for the Boeing Aerospace Group. Professor Nolan currently conducts a doctoral seminar on computer-based systems at the Harvard Graduate School of Business.

GUEST SPEAKER LUNCHEON – APRIL 23

Alan Lakein founded Alan Lakein & Co. in 1968. As specialists in Time Management, Alan Lakain & Co. consults with IBM, Xerox and AT&T, many local and federal agencies, and personally works with stars in the entertainment world. A graduate of the Harvard Business School, Mr. Lakein has written How To Get Control of Your Time And Your Life. He has appeared on Johnny Carson's "Tonight Show" and other national network television shows.

GUEST SPEAKER – LUNCHEON – APRIL 24

Leonard W. Miller is Director of Practice Development for Arthur Young and Co. In his previous capacity as head of their Management Consulting activities, he was heavily involved with top management EDP decisions.

GUEST SPEAKER – KEYNOTE ADDRESS – APRIL 22

Larry Welke is founder and President of International Computer Programs, Inc. He was Vice President of Automated Customer Services for Merchants National Bank, and is President of the SIA Division of ADAPSO.

GUEST SPEAKER – LUNCHEON – APRIL 22

HARDWARE MANAGEMENT

CASE (Computer-Aided System Evaluation)
TESDATA Systems Corporation
User: Ernst & Ernst
Speaker: J. Stephan Shattuck

EDOS Release 5.3
The Computer Software Company
User: Datatel
Speaker: Paul Hawkins

GRASP/II – 360/370 DOS Enhancement System
Software Design, Inc.
User: Northrup-Page Communications
Speaker: Richerd E. Hanson

OS/DOS Job Accounting Report System
Johnson Systems, Inc.
User: American Management Systems
Speaker: Jerry B. Wellen
User: Blue Cross-Blue Shield of N.C.
Speaker: Thomas R. C. Worley

PPE/CUE
Boole & Babbage, Inc.
User: The First National Bank of Chicago
Speaker: Robert L. Pugsley

SPRINT Spooling and Job Accounting System
OXFORD Software Corporation
User: Integrated Business Methods, Inc.
Speaker: Allan Hobbs, Jr.
User: Pennsylvania Hospital
Speaker: Michael Lopez

System III Computer Scheduling System
Value Computing Inc.
User: Johnson & Johnson
Speaker: Larry Muth, Jr.

Tape Library Management System (TLMS)
Gulf Computer Sciences, Inc.
User: Cogna Systems Corporation
Speaker: Gordon R. Gray

UCC ONE Tape Management Software
University Computing Company
User: Kiplinger Washington Editors, Inc.
Speaker: John A. DeDominicis

SOFTWARE MANAGEMENT

DATACOM/DC
Computer Information Management Company
User: Southland Corporation
Speaker: Rulon R. Brough

INTERCOMM
Programming Methods
User: Social Security Administration
Speaker: Al Laung

PANVALET
Pansophic Systems Incorporated
User: Bankers National Life Insurance Co.
Speaker: James B. Burns

ROSCOE
Applied Data Research, Inc.
User: Brown Company
Speaker: James Eccles

TASK/MASTER
turnkey systems inc.
User: Indiana University Hospital
Speaker: James Nalson McCoy
User: DOMTAR Ltd.
Speaker: Rodney J. Morrell

DATA MANAGEMENT

ADABAS
Software AG of NorthAmerica Inc.
User: Associates Computer Services
Speaker: Larry F. Bowman

INQUIRE
INFODATA Systems Inc
User: E. R. Squibb & Sons, Inc.
Speaker: Paul A. Roskos

MARK IV File Management System
Informatics MARK IV Systems Company
User: Buckbee-Mears Company
Speaker: H. Douglas Smith

SyncSort III
Whitlow Computer Systems, Inc.
User: Fireman's Fund American
Speaker: Dawn Fitzwater

SYSTEM 2000
MRI Systems Corporation
User: U. S. Geological Survey
Speaker: Claud H. Baker, Jr.

TOTAL
Cincom Systems, Inc.
User: The American University
Speaker: Wellace C. Knapp

VISAM 360/370
The Wailand Computer Group, Inc.
User: Rockingham National Bank
Speaker: Michael W. Thatcher

SYSTEM DESIGN MANAGEMENT

The Data Analyzer
Program Products Incorporated
User: Amerada Hess Corporation
Speaker: Tom Carpenter

DATAMACS
Management and Computer Services, Inc.
User: Xerox Corporation
Speaker: David R. Swartz
Dieter Hildemann

DYL-260
DYLAKOR Computer Systems, Inc.
User: U.S. General Accounting Office
Speaker: John Lainhart

PROJECT CONTROL/70
Atlantic Software Inc.
User: First National Bank of Atlanta
Speaker: William L. Kalaher

PRO/TEST
Synergetics Corporation
User: Colgate-Palmolive Company
Speaker: John H. Cusick

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CCI Front End Needs Minimal Line Systems

TORRANCE, Calif. – Computer Communications, Inc. (CCI) has designed a front-end processing system for communication users with minimal line configurations.

The system, designated the CC-8 Computer Communicator, is a subset of the CC-80 Computer Communicator announced earlier. Like the CC-80, the CC-8 is said to be completely compatible with IBM 360/370 computers; 2701, 2702, 2703 and 3704/3705 communications controllers; and IBM teleprocessing software, the firm said.

The CC-8 offers the user an initial low-cost communications line control in a current network and a base from which to grow, due to the modular architecture of both hardware and software, to a full-capacity CC-80 front-end processing system.

Complete operating software will be available with the CC-8, including a 3701/2702/2703 Emulation Program and a comprehensive Network Communication System (NCS) which is said to provide all of the features of IBM's Network Control Program (NCP). Additional modules for overall computer-communication network routing and control will also be provided.

The CC-8 (NCS) software is compatible with IBM's NCP, Emulation Program and Partitional Emulation Program. It is also compatible with Btam, Qtam, Tcam, Vtam, Hasp, IMS and CICS.

The front end handles start/stop, binary synchronous communication and Synchronous Data Link Control (SDLC) lines with line speeds ranging from 45.5 bit/sec to 230.4 bit/sec. It handles any mix of line speeds, terminals, and communications disciplines

The CC-8 is field-upgradable to a CC-80 system, and has a purchase price starting at $46,500. A typical three-year lease starts at $825/mo.

First deliveries are set for second quarter from CCI at 2610 Columbia St., 90503.

Terminal Selection – Part 1

Application Controlling Factor in Choice

By Bob Brown
Special to Computerworld

Twenty years ago, someone who wanted a keyboard-driven I/O device for his computer had an easy choice. He either bought an "automatic typewriter" such as the Flexowriter or, more likely, a device like the Teletype Model 33, whose wide availability and relatively low cost made it a de facto standard.

Today the choice is much harder. General-purpose terminals now range from "dumb" CRTs and typewriter terminals up to systems which are in fact microcomputers.

With this number of possibilities, the user who carefully figures out the requirements of his application will almost certainly be able to find a terminal to match them.

Uses of General-Purpose Terminals

Computer terminals are put to use in about five general application categories.

Data entry is one of the largest applications. In such systems, data is entered through terminals, preedited and stored for later batch processing.

The preedit step can often take the place of key verification by allowing range checks, reasonableness checks, crossfoot balancing and other forms of data verification to be performed as the data is keyed.

Data which fails an edit may be rekeyed at once, saving the valuable personnel time required to prepare edit reports, locate source documents, rebatch and rerun the edit cycle.

Data entry via the terminal may be further divided into three classes: structured, fill-in-the-form and free-form.

Structured entry corresponds exactly to keypunching. The operator enters data according to a rigorous format without field separators or other format effectors.

Since hard copy is seldom if ever required, a CRT is the logical choice for this type of operation. Because the bulk of the transmission is from the terminal at human keying speeds, a low-speed terminal will suffice; only a few lines of display space are required.

Fill-in-the-form operation is a natural for a CRT terminal. In this case, it is desirable to have a screen large enough to hold the entire form. Because the form is transmitted from the computer, a higher speed will improve throughput, especially if the form must be changed frequently.

Free-form data entry (text entry) is another operation where low speed is sufficient. In this case, hard copy may be required; it can be produced by a typewriter terminal, by a printer attached to a CRT or at a central location on a mainframe line printer.

A terminal-based inquiry/response capability allows users to examine selected portions of their data base on-line. However, they use batch operations, rather than on-line entry to modify the data files.

Terminal inquiry/response can improve the timeliness of information flow and may reduce or end the user's need for batch-produced reports. Terminal requirements will depend on the application.

On-line data base maintenance combines the concepts of terminal data entry and inquiry/response systems. Data entered at a terminal is immediately applied to master files, bypassing the batch update step.

Very often such terminals are located in the user departments, reducing the need for a separate data entry department and giving the user greater control over and responsibility for his data.

Document preparation systems permit the preparation of hard-copy documents, such as insurance policies, at remote locations while capturing data for the computer and possibly retrieving data from other mainframe files. Here of course some type of hard-copy terminal is essential.

On-line programming was one of the earliest and most ambitious uses of computer terminals. In this type of system, the user has access to an editor, one or more compilers (or interpreters) and a file management system. He can write, compile and execute programs of his own devising from his terminal.

Types of Software

Another way of viewing the use of terminals is to examine the software which drives them.

There are three main classes of software. Dedicated systems, such as airline reservation systems, are driven by highly specialized application packages. The terminals are always logically connected (or dedicated) to one application.

A more generalized approach is the transaction-driven system, of which IBM's Customer Information Control System (CICS) is an example. In a transaction-driven system the terminals are connected to a submonitor which is interposed between the terminals and the application programs. A user must indicate to the submonitor which application program he wants, and the submonitor loads it for him.

The most general systems are those in which the terminal user has access to the program development facilities of the system, allowing him to write and run his own programs. This is by far the most flexible and powerful level of operation, hut also requires the most skill on the part of the user.

(Continued on Page 18)

Put Power in Terminal

By Bob Brown
Special to Computerworld

With loads on mainframes approaching saturation and with communication speeds above 120 char./sec becoming very expensive, it makes sense to put some of the computing power where the terminal is, rather than relying on the mainframe and communication channel to carry the whole load.

And with the development of inexpensive microprocessor chips, this is becoming practical. A terminal processor, it must be remembered, doesn't need large word sizes or fast cycle times; it handles input from only one or a few sources at human interface speeds.

If forms for fill-in-the-form data entry and some of the edit checks can be run on the terminal processor, it may be possible to greatly reduce line costs by using lower speed lines. In many cases it is possible to run programmable terminals off-line in stand-alone mode all day accumulating data, then transmit the data at night when CPU loads are lighter. Some applications can be put entirely on the large programmable terminals.

Programmable terminals come in three classes, depending largely on how easy it is for the user to get at the microprocessor's power. The lowest (and least flexihle) class includes those terminals which are read-only memory (ROM) programmed by the vendor. Changing the program means contacting the vendor and getting a new ROM.

The next level allows the user to specify parameters to modify the vendor's programs.

The most powerful programmable terminals are those in which the user can actually manipulate the microprocessor's instruction set himself.

CDI Miniterm Weighs 17 Pounds

NEW YORK – The Miniterm from Computer Devices, Inc. (CDI) is described as a low-weight, full teletypewriter-compatihle, hard-copy terminal.

Introduced at the Computer Caravan here, the 17-lb device with full Ascii keyboard and thermal printer will cost about $1,000 less and be about one-third smaller than the CDI 930 it is expected to replace, a company spokesman said.

The Miniterm's keyboard provides three switch-selectable modes of operation. In teletypewriter mode, the keyboard resembles a keyboard send/receive Teletype Model 33; typewriter mode provides both lower and upper case; and a 10-key numeric pad is also built into the keyboard.

Using CDI's Q3 thermal printer, the Miniterm prints at 30 char./sec on "the lowest-cost" thermal paper, CDI said.

The terminal transmits at rates up to 300 bit/sec over either dial-up or leased lines through Bell 103-type external modems and comes with either RS-232 or TTL serial interfaces.

The Miniterm will cost $1,750 when deliveries start in November from the firm at 9 Ray Ave., Burlington, Mass.

Terminal Transactions

'Front End' Lets Shop Send DOS Data to OS System

By Toni Wiseman
Of the CW Staff

PHILADELPHIA – While the idea of transmitting data from DOS to OS systems is a fairly new one for most people, the recent release of an IBM DOS/VS remote job entry (RJE) workstation would seem to favor the progress of the concept, according to John Halloran.

Halloran, director of university computer activity at Villanova University, noted this "front-end concept" has been in effect for five years in his shop, where one 10K partition of a 144K 370/135 DOS/VS system is communicating with a 370/168 OS/Hasp system.

This "different" approach to remote terminal processing is made possible by a specialized communications package known as RMTDOS, which allows the university to maintain a continuous communications link with the 370/168 while the 135 is running three other completely independent processing functions for the faculty, student and administrative bodies of the school.

Before upgrading to the 135, the university had a 360/30 which, it soon found, was inadequate for its processing needs. As a result, a decision was made to join a consortium of local colleges and universities (called Uni-Coll Corp.) in developing a communications network with a 360/65 at the consortium's DP center.

The early transmission of data from Villanova to the 65 was completed via an IBM communications software package called RMT360, which required Villanova's 360/30 to be dedicated to the function of a remote workstation for Hasp/RJE. This meant, Halloran said, administrative processing had to wait until the academic programs were completed, since RMT360 did not permit multiprogramming.

For this reason, as well as the fact that the 360/30 was too expensive a piece of equipment to be used so inefficiently as a workstation for such long periods, the university contracted to have a package written which would allow a DOS system to communicate with a Hasp/RJE system while operating in a multiprogramming capacity.

Since that time, he noted, Villanova has upgraded to a 370/135 and Uni-Coll to a 370/168, but the principle of the concept remains the same.

"RMTDOS is a software package that allows an IBM 360 or 370 system to submit jobs for processing on another 360 or 370 capable of supporting an OS/Hasp, ASP, or VS2/JES2 system," Halloran said.

Unlike the RMT360 standalone workstation, RMTDOS runs in a partition of TOS, DOS or DOS/VS, thereby allowing concurrent processing in other partitions, he said. The package supports binary synchronous communications, up to seven reader devices and up to seven print and punch devices.

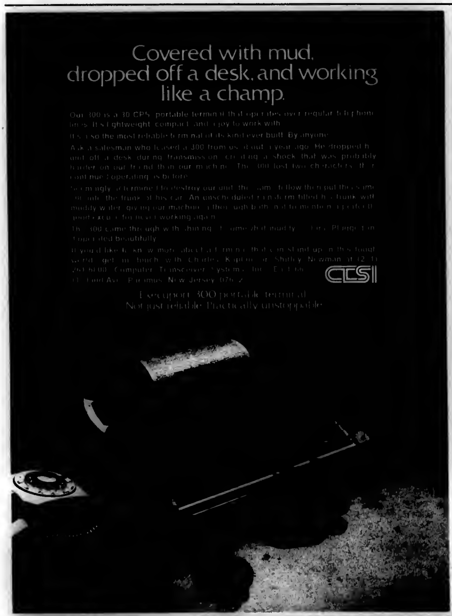
"The communications control devices it will support are an integrated communications adapter, a 2701 data adapter, a 2703 transmission control unit or a 3704 or 3705 communications controller in emulation mode," he noted. The RMTDOS software is available to commercial users for $4,000 from the director of university computer activities, Villanova University, Villanova, Pa. 19085.

Vacillating Trends

"The trends toward centralizing and decentralizing computer facilities has vacillated over the past two decades," Halloran said. "Emerging hardware technology has probably had the most dramatic effect on these trends, and this will probably continue to be the case in the future."

Minicomputers are no longer mere workstation devices which serve as data exchangers or distributive computer units, he said. They are "stand-alone" units which have the capacity to be united in one or more supporting networks.

"With RMTDOS, data accumulated at a Data General Nova 1200 can be sent to the 135 over a hard-wire line where it will be stored for subsequent processing," he said. "After condensation, manipulation or synthesization of the data, a decision can be made to send the data back to the Nova or to send it to the large 168 via RMTDOS," he explained.



Application Dictates Choice

(Continued from Page 17)

It also poses difficult questions in the areas of security and data integrity, especially if several users share a common data base.

Hard Copy Or CRT?

The most obvious hardware distinction between terminals used in these applications is that some of them have hard-copy printers while others have CRT displays attached; a few types have both.

In the past, and in some cases today, hard-copy terminals have been less expensive than CRTs. As large-scale integration drives down the price of electronics and as mechanical assemblies become more expensive, this trend is being reversed.

CRTs don't require consumables like paper and ribbons, but neither do they produce hard copies. With fewer moving parts, CRTs tend to be more reliable. Editing capabilities which are easy to build into buffered CRTs are difficult or impossible to duplicate on hard-copy terminals, some of which can also be quite noisy.

In general, the speeds of hard-copy terminals are limited by mechanical constraints while CRTs can operate at electronic speeds.

However, the application remains the controlling factor in selecting a terminal.

Brown is chief of information systems research and development at the Medical Association of Georgia.

Terminal Tidbits

WTI Punched Card Devices Expanded to 120 Char./Sec

COSTA MESA, Calif. – The Western Telematic, Inc. (WTI) CT series of punched card terminals has been expanded to include standard terminal rates and codes to 120 char./sec, which makes it compatible with the GE Terminet 1200 and other 120 char./sec terminals using Bell 202C-type modems.

The CTA-31C includes a full card buffer for the faster data rates and nearly silent operation, making it useful for CRT or thermal-type printing terminals. Connecting transparently between the display terminal and its dataset, the CT series reads both program and data cards under CPU control.

Terminal support includes most Ascii terminals with external RS-232 data set connection, WTI said.

The Model CTA 31C costs $4,175 or $148/mo with maintenance on a one-year lease. Delivery is 6 weeks from 3001 Red Hill, Building 5-107, 92626.

RCA Gives Dial-Up Capabilities To Model 33ASR Teleprinter

CAMDEN, N.J. – RCA Service Co. has added dial-up capabilities to its Model 33 automatic send/receive (ASR) teleprinter.

The terminal, equipped with the Bell 101C data set, is compatible with the Bell Data-Phone service and Western Union's TWX service. The Model 33ASR automatically recognizes types of calls, RCA said.

The 33ASR operates with 8-level Ascii code. Other features include automatic, unattended operation; an operator-selectable, half- or full-duplex automatic reader; automatically triggered answer-back; and an optional "tape on/tape off."

The terminal costs $84/mo and the rental price includes maintenance service by RCA from more than 140 service locations nationwide.

RCA Service Co. is at Building 204-2, Cherry Hill Offices, 08101.

Singer-MMCI Units Support RPG-II

ORANGE, Calif. – RPG-II user programming is now available on all Singer-MMCI intelligent remote batch terminals. The program is punch card-oriented and supports peripherals consisting of line printers (300- to 1,200 line/min), card readers (300- to 1,200 card/min)) and card punches (50- to 285 card/min). It has a one-pass compiler and is available with processor memories of 12K to 32K.

With the software, local job generation and editing is possible on Singer-MMCI remote job entry terminals prior to batching to the central site.

The RPG-II program is priced at $75/mo with a $100 installation charge. It is available for immediate delivery from the firm at 2201 N. Glassell, 92665.

MDS Adds Multipoint Inquiry

UTICA, N.Y. – Mohawk Data Sciences (MDS) has introduced a multipoint/inquiry communications feature that allows one or more of its MDS 2300 DPS terminals to remain in constant contact with the central processor.

With this feature, the dispersed terminals acknowledge the CPU only when it polls with their unique identifier. The central site, in turn, is alert to inquiries from a terminal into the central data base.

A basic 2300 DPS system includes a systems controller with 4K memory, disk, CRT, 132-column printer and a binary synchronous communications controller, contained in one desksize console.

The multipoint/inquiry communications feature is a no-charge option but requires a 4K memory expansion. Memory expansion is $40/mo. MDS can be reached through Box 362, 13503.

Datamedia Designs Low-Cost CRT

PENNSAUKEN, N.J. – Datamedia Corp. has introduced a low-cost conversational video terminal, the Elite 1520A, that includes a full upper- and lower-case display.

An unbuffered teletypewriter-compatible CRT terminal, the 1520A displays 1,920 alphanumeric characters in a 24-line, 80-character format, with a 64-character Ascii set. The full 128-character upper- and lower-case Ascii set is optionally available.

The stand-alone terminal contains an alphanumeric display, keyboard (which is separated from the display), storage, control logic and asynchronous communications interface.

Designed for interactive applications, data entry, information retrieval and any related data communications requirement, the CRT accommodates a standard RS-232C or optional current loop interface.

Transmission is character by character in half- or full-duplex mode, and the speed is switch-selectable between any two speeds in the 50- to 9,600 bit/sec range, Datamedia said.

Editing features in the display unit include Clear Screen, Clear to End of Page, Clear to End of Line, Cursor Up, Down, Left, Right, Home, Overstrike and Absolute Cursor Addressing. The cursor is a nondestructive, blinking or nonblinking underscore and fully addressable on an X-Y coordinate basis.

The terminal writes from the home position in the upper left corner of the screen and upshifts after completing a page. It also provides back-spacing capabilities. Brightness and contrast controls are provided for the operator.

The Elite 1520A, available in 60 days, is priced at $1,555 ($1,655 with upper- and lower-case option). The firm is located at 7300 N. Crescent Blvd., 08110.

Limited-Area Modem Runs at 19.2 Kbit/Sec

ROCKVILLE, Md. – A limited-distance modem for low-cost data transmission at rates up to 19.2 kbit/sec has been introduced by Syntech Corp.

The LDM-192 provides simplex, half-duplex or full-duplex operation over unconditioned lines at distances up to three miles, the company said. It transmits and receives serial data at asynchronous rates up to 19.2 kbit/sec and features selectable synchronous rates of 3,600-, 4,800-, 7,200- and 9,600 bit/sec and 14.4- and 19.2 kbit/sec.

The modem operates on both point-to-point and multipoint networks. Typical applications include communications within large buildings and communications between nearby buildings such as in industrial parks or on a school campus.

The LDM-192 is also available with an integral buffer to extend a conventional modem link for distribution at a remote site. The basic unit costs $995 from Syntech at 11810 Parklawn Drive, 20852.

BASF an
its own "Winchest

You've undoubtedly been following the progress of the 3348, or "Winchester," Data Module in the computer press. You know it's a completely self-contained unit, incorporating heads, spindles, and recording surfaces in a protective factory-sealed pack. You've heard of the advantages of this new technology . . . complete security from environmental
contamination, improved high-d
fast access. And now, you can or
Module from BASF, with all the c
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We've selected leading experts from around the country to give seminars on some of the most important topics on today's EDP scene These seminars are current, practically oriented, and packed with detailed information They will help you save time and money And they can give you the information you need to increase your installation's efficiency In an increasingly complex and fast-changing EDP world, these seminars are even more important to your company, your installation, and you. Here is our current seminar schedule.

Data Communications

Course #1010–
Practical Data Communications Systems and Concepts

This course will give you the information you need to master the newest developments in Data Communications Led by the nationally recognized teleprocessing consultant, Dr Dixon Doll, the course covers recent changes in areas like SDLC HiD LoD, DDS, newly approved major revisions to WATS, and the impact of satellite carriers This seminar runs two days, and total cost, including workbook, reference materials, luncheons and continental breakfasts is $350 Additional registrants from the same company qualify for a reduced rate of $300 Current schedule is as follows

Chicago – Jun 2 3
Orlando – Jul 2 3
Washington, D. C. – Jun 9 10

Course #1020–
Advanced Teleprocessing Systems Analysis and Design

This course is a follow up to Course #1010, with special emphasis on problem solving techniques for minimizing operating costs in commercial data communications networks Also led by Dr Dixon Doll the course covers procedures, approaches and algorithms for evaluating and cost optimizing network organizations

This seminar runs three days and total cost, including an extensive set of customized course materials, luncheons and continental breakfasts is $450 Additional registrants from the same company qualify for a reduced rate of $400 Current schedule is as follows

Los Angeles – Jun 16 18

Data Base Design

A practical approach to the design, implementation, and maintenance of data base systems.

Effective data base system design requires both a complete knowledge of the facilities provided by a data base package and a basic understanding of the mechanisms which can be employed to construct data base systems In fact the former is of questionable value without the latter

This course is a package independent examination of the techniques required for the design of effective data base systems The topics covered include

- *Effective Record Design*
- *Physical Storage Techniques*
- *Optimum File Organization and Indexing Techniques*
- *File Integration*
- *and much more*

Given in association with Leo J. Cohen and Performance Development Corporation, this course reinforces the lecture material with workshops in which attendees apply the techniques just learned to practical problems

You should attend this seminar if you are (or will be) involved in the design and/or implementation of a data base system and whether as a Data Base Designer, Planner or Analyst

This course runs for 3 days and costs $350 including course materials, continental breakfasts and luncheons Additional registrants from the same company qualify for a reduced rate of $300 Current schedule

Chicago	Sheraton O'Hare Motel	May 12-14
New York	The Plaza	June 2-4

Legal Tools for Computer Contracting & Protection

A seminar that gives you the legal tools you need for effective negotiations, agreement drafting, warranties, security, tax planning and software protection.

The impact of the law is felt in virtually every aspect of the computer industry, and you need to know how to apply the legal rules in a positive way to increase you advantage in dealing with vendors that supply your installation This course teaches you how to avoid the legal pitfalls that can be costly and embarrassing to you

Under the personal instruction of Roy N Freed, a nationally known lawyer, author, educator and expert in the field of Computer Law, you'll learn how to protect your interests in subject areas like these Negotiations, Contracts, Warranties, Avoidance and resolution of disputes, Security, Fraud, Taxation, as well as Techniques in handling any transaction And practical discussion and review of your own contracts is an added feature of this seminar

You should attend this seminar if you are involved in contracting for the use of computers or computer services whether as a Corporate Executive, DP Manager, Contract Administrator, Consultant, Inside Counsel, or as a Private Practitioner involved with clients who use computers. Cost for the entire 2½ day seminar, including continental breakfasts, luncheons, and complete resource materials is $325 Additional registrants from the same company are charged only $275 Current Schedule

New York	St. Moritz	June 4-6
Atlanta	Stouffers Atlanta Inn	April 23-25

Performance Evaluation and Improvement

A seminar actually designed to save your installation money.

This course starts with a discussion of questions and specific problems attendees have about system performance at their own installation Then step by step each attendee will learn the methodology necessary to understand the problems and implement the answers. The techniques presented at this seminar are in effect at numerous installations today, and have extended the life of one S/360 for more than two years – a savings, at last estimate, of more than $700,000 for one user

Our course leader is Saul Stimler His book, *Data Processing Systems their performance, evaluation, measurement, and improvement*, will be an important part of the seminar. As well as case studies, topics that will be covered include

- *Criteria for quantifying performance* • *Pencil and paper analysis of a system*
- *Benchmarking techniques* • *Realtime, batch, and interactive time sharing systems*

You should attend this seminar if you are a data processing professional or corporate executive whose responsibility it is to plan, benchmark, evaluate, or improve data processing systems

Cost for the entire seminar, including continental breakfasts, luncheons, and all course materials (including a copy of Saul Stimler's book on the subject) is only $250

Current schedule

New York	**Waldorf-Astoria**	**May 5-6**

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Key-to-Storage Systems

How to evaluate and optimize the various successors to keypunch equipment.

Data entry is a big problem – and a big headache – as every computer user knows It is therefore a prime target for cost savings This course is designed to help you in the practical aspects of selecting, installing, and making the best use of keyboard to storage systems It is an expansion and an update of our successful key disk seminar Under discussion (including some user case studies) will be

- Introduction to data entry concepts (keypunch, buffered keypunch, keypunch, key-disk and beyond)
- Key-disk hardware and software
- Evaluating . . and starting key-disk systems
- Selecting and operating intelligent terminals, both key-to-cassette and key-to-floppy disk
- Key-disk as a remote batch terminal
- Supervisor functions, motivation
- Mixed Media systems
- Trends in Computer Data Entry

This seminar is lead by Lawrence Feidelman, President of Management Information Corporation, and one of America's leading experts on data entry All participants will receive a copy of "Data Entry Today", Management Information Corporation's authoritative publication on every aspect of data entry, including a six-month update of this continuing reference service.

You should attend this seminar if you are concerned with optimization of your data entry shop, and especially if you are considering or currently using key-to-storage systems more advanced than basic keypunch Cost for the 3-day seminar is $350, including continental breakfasts, luncheons, and all course materials Additional registrants from the same company are charged only $300

New York	Waldorf Astoria	April 21-23
Chicago	Hyatt Regency O'Hare	June 9-11

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The bureau is saving $82,000/year with its five 22-station key-to-disk systems after its switch from a keypunching approach.

George Osganian Jr. and A. Phyllis O'Halloran watch Jan Sage operate one of the GCS key-to-disk units that the department uses to input tax returns.

Switch Key-to-Disk Not Taxing As Mass. Nets $82,000 Saving

By Patrick Ward
Of the CW Staff

BOSTON – When the Massachusetts bureau that handles tax returns switched to key-to-disk data entry, it not only wanted to get rid of punch cards but to allow its operators to perform edits and balances as they input individual returns.

The result was a net $82,000/year savings in labor, equipment and supplies compared to keypunching, according to George Osganian Jr., chief of the Bureau of Analysis and Processing in the Department of Corporations and Taxation.

The bureau gradually transferred its 100 data entry operators from 106 IBM 029 and 059 keypunches and verifiers to 110 General Computer Systems (GCS) 2100 key-to-disk stations during the second half of last year.

The change boosted productivity so much that this year the bureau eliminated the second half-shift of 80 keypunching and verifying operators that formerly worked from 6 p.m. to 10 p.m., January to June.

This brought an $81,000 savings in personnel costs alone, Osganian said.

Since the bureau had previously keyed about 9.5 million card/year, the switch to key-to-disk meant a $25,200 savings in card costs, he added. It also ended card storage problems.

Biggest Application

Although it handles business taxes as well, the bureau's biggest application is the 2.4 million personal income tax returns that come pouring in each spring.

Now, when a key station operator enters data from a tax return, the system adds and subtracts entries that fall under a 5% tax rate and does the same for entries under a 9% tax rate. The system then calculates a total tax.

The operator next keys in any of several possible credit items, which the system adds up and subtracts from the total tax to produce a credit or balance due.

If the operator finds his balance doesn't match the taxpayer's, he can review the process to see whose mistake it was. The key-to-disk system automatically routes out-of-balance returns to a verifier operator for double checking.

All of the returns that do balance out the first time go through batch edits run by the individual operators. The data is then collected on tape for processing on the bureau's IBM 360/40.

Selecting out only those returns which need to be verified and eliminating card handling are mainly responsible for the throughput gain, Osganian said.

The switch to CRT entry also pleased the operators, said A. Phyllis O'Halloran, assistant chief.

With the keypunches, operators "just picked up what they saw," she said. "Now they are doing a bit of thinking" as they work with the returns.

When the bureau was looking for a key-to-disk system, the ability of the equipment to handle calculations and deal with variable-length fields was of prime importance, Osganian and O'Halloran said.

The bureau prepared specifications based on its application requirements and received bids from Entrex, Four-Phase, GCS, Lockheed, Computer Machinery Corp., GT&E, Inforex, Mohawk and IBM.

The bureau used its own operators for every benchmark. "Each vendor took seven or eight of our operators to its place of business where it trained them for two to three days," Osganian said.

The benchmark results ran on the bureau's 360/40 and bureau officials also listened to the operators' evaluations of the equipment they had worked on, O'Halloran said.

The GCS equipment most closely matched the capabilities the bureau wanted for its applications. Operators liked the feel and ease of operating the terminals and the clearly marked function keys.

The transition from keypunch equipment "was not as bad as we thought it would be," O'Halloran recalled. "Everybody just threw himself right into it."

Even supervisors who had worked with the previous method for years were very cooperative, she said.

The possibility of key-to-disk controller downtime doesn't worry the tax bureau officials. There hasn't been a problem so far, O'Halloran said. With five controllers and the duplexing capability to switch terminals to another controller, the bureau feels well-protected.

A 22-terminal GCS 2100 system costs the bureau $2,555/mo, officials said.

In Contrast to Last Year

Most 370 Sites Run Under VS

By Roland Parenteau
Special to Computerworld

Most computer installations with an IBM System 370 are now using a VS operating system, a recent survey by Datapro Research Corp. found.

The survey findings are in sharp contrast to last year's survey, which found many 370 users were still operating with a 360 operating system.

Reasons the users gave for switching to virtual storage operating systems included a desire to implement new applications where VS could better manage programs and a desire to install new and more cost-effective peripheral devices, Datapro said.

"Several respondents stated quite frankly that System 370 users who haven't installed one of the virtual-storage operating systems effectively forfeit their option to purchase new IBM hardware, a condition few installations are willing to accept," the survey also reported.

The study found most 370 users are satisfied with their machines: 93% of the respondents said their overall satisfaction with the 370 was good or excellent.

The advantage most often noted by respondents was the reliability of the 370 mainframe, which 59% of respondents rated excellent and 36% rated good.

385 Sites Surveyed

Datapro surveyed 385 System 370 installations with 440 machines among them. Eleven different categories were scored on a scale from 1 to 4, with 1 being "poor" and 4 considered "excellent."

The 370 was rated good to excellent in ease of operation by 96% of the users, for an average score of 3.4. Ninety-five percent said the mainframe reliability was good to excellent, giving the 370 an average rating of 3.5 in this area.

Users were slightly less excited about technical support provided by IBM, rating it at an average 2.9, with 25% categorizing their support as fair and 3% calling it poor. IBM also rated less than good in the area of application programs, where 14% of the users answered fair and another 2% replied poor, for an average rating of 2.9.

"Although IBM has been eager to lead its customers into the promised land of virtual storage, it hasn't always managed to provide guides who were familiar with the territory," Datapro said.

Cost a Disadvantage

Users cited the high cost of the equipment as one of the necessary disadvantages of the 370 product line, but companies realized they were paying premium prices "in order to acquire computer equipment from the dominant computer manufacturer," the report said.

The research report concluded that, since 93% of the respondents were satisfied with their

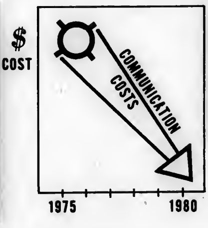
(Continued on Page 24)

Tape Reel Eases Operation

HUNTLEY, Ill. – The Quadreel computer tape reel from Wabash Tape Corp. is said to ease loading and unloading and extend reel life.

The reel components are bonded four ways, yielding an integral monolithic structure which matches the physical characteristics of Quadronix tape, according to Wabash.

Field tests have shown the Quadreel eliminates loose hubs, inhibits tape cinching and slipping, improves tape stacking, eases reel loading and unloading, extends reel life and enhances drive performance, the firm said.



At Credit Bureau, Inc.

Independent's Disk Speed Credit Data

ATLANTA – When a retailer verifies an application for credit from a waiting customer, every second counts and accuracy is key.

Credit Bureau, Inc. (CBI) is utilizing a disk storage system to realize these goals.

The Memorex 3670 system is helping make CBI's rapid credit report turnaround time (maximum) easier to achieve, CBI said. The access time for the drives is an average of 27 µsec, 10% faster than the IBM 3330, the replaced storage facility, Memorex added.

'99.5%' Reliability

Ray McConnell, CBI director of operations, said the reliability of the 3670 "is a very respectable 99.5%. And not only that, but we've had a rental savings besides." The disk subsystem operates 24 hours daily.

The installation at CBI includes eight Memorex 3671 storage control units, each connected to six 3670 modules, for a total of 48 modules or 96 spindles. The total storage potential is 9.6 billion bytes, enough to cope with over 20 million consumer files.

Hard-Copy Terminals

CBI's information center is linked to over 1,000 terminals located in customer facilities and in CBI's 10 regional offices, plus five affiliated offices served by CBI around the country.

The terminals are hard-copy types made by both Raytheon and RCA. They communicate at data rates ranging from 2,400- to 9,600 bit/in. on leased telephone lines, while dial-up lines operate as low as 100 bit/in.

To handle this large number of lines at a variety of speeds and in a variety of formats, such as Ebcdic, Ascii and BCD, three Memorex 1270 terminal control units were installed. The 1270s control 220 high-speed lines and 30 low-speed lines. Each 1270 is capable of controlling 96 lines.

CBI customers have direct communication with the computer center through automatic send-receive equipment at the speed of 30 char./sec. Users of their service, such as retail shops, banks and department stores which do not have their own terminals, call the CBI offices, which in turn use their video display terminals to enter and receive data on the consumer.

CDC Disk Pack Fits IBM 3330-11 Drives

MINNEAPOLIS – Control Data Corp. has begun deliveries of its 882 disk pack for use on the IBM 3330-11 series or equivalent disk drives.

The 882 is a double-density (200M bytes), 12-high IBM-compatible disk pack that includes 19 data surfaces and 1 servo surface. Data surfaces are factory formatted, and the servo disk is written at the factory.

End-user prices of the 882 disk pack range from $960 to $995, depending on quantity.

COM Comes Full-Size With Realist Reader

MENOMONEE FALLS, Wis. – The Vantage COM II microfilm reader from Realist, Inc. is designed to magnify computer output microfilm (COM) to full size on its 11-in. by 14-in. screen. A 25% increase in image size is possible using Realist's Vari-Optic Magnification Control, the vendor said.

The Vantage COM II includes a strip indexing system that puts x and y coordiates on the carrier for simplified operator use.

The reader sells for $235 from the firm at N93 W16288 Megal Drive, 53051.

EDPvelope on Forms Acts as Self-Mailer

JERSEY CITY, N.J. – EDPvelopes from Pavey Envelope and Tag Corp. eliminate the step of stuffing a form into an envelope after bursting from the computer. The EDPvelope is an integral part of the form, and contains the necessary data for mailing, the firm said.

The EDPvelope line consists of both stock one-way and two-way mailers, as well as custom-designed formats. The two-way type contains a return envelope for remailing.

The firm is at 25 Linden Ave. East, 07305.

Sites Run Under VS

(Continued from Page 23)

machines, the great majority must feel the 370 is worth the extra dollars. But the research firm did note many users were buying software packages from independent suppliers or had found ways to cut costs by acquiring their systems from third-party leasing companies and employing plug-compatible peripherals.

Also, Datapro warned, users "are withholding their final judgment until IBM delivers its long-awaited data communications software for the System 370."

The report, entitled "IBM System 370: An Independent Appraisal," is available for $15 from the research company at 1805 Underwood Blvd., 08075.

Foam Plastic Not Acceptable

BOSTON – The National Fire Protection Association (NFPA) has released an official interpretation of the "Standard for the Protection of Electronic Computer/Data Processing Equipment" (NFPA 75).

Pertaining to the current edition, dated 1972, the official interpretation concerns Paragraph 4308 on acoustical materials.

"Question: Will you please advise if an expanded foam plastic, which has been categorized as 'self-extinguishing' under UL Subject 94 or ASTM-D-1692-68, will fulfill the requirements of 4308?

"Answer: No. The Interpretation Committee felt ASTM-D-1692-68 would not be an acceptable test in accordance with Paragraph 4308. It was further felt UL No. 94, which it is understood was changed, no longer uses the term 'self-extinguishing' and would also not be applicable."

County DP Center Handles Range Of Services for $89,000/Year

NEVADA CITY, Calif. – You don't have to be big to be efficient. A good case in point is the DP center administered by auditor-controller John T. Trauner of California's Nevada County.

It is probably as sophisticated, in terms of performance, as that of any other governmental unit in the state. Yet the cost – including salaries for the four-member staff and lease-purchase payments for the computer – comes to only $89,000 a year – or $3.56 per capita for the county's 25,000 residents.

The annual county budget is a modest $10 million, but the taxes to meet it must be levied against 43,000 land parcels. In addition, there are 125 local tax levies for special school, sanitation, soil conservation, fire, cemetery and road improvement districts.

The increasing complexity of such computations and the need for better management information overall led, in November 1971, to replacement of a magnetic ledger card machine with an NCR Century 100 computer. Two years later, this was upgraded to an NCR Century 101.

"We had put on so many applications that we had to run 16 hours a day," said Nancy Phillips, the programming supervisor. "Now we're back to one eight-hour shift, and we've actually cut processing needs by two-thirds because we have time for compiling and testing new programs."

The new computer has double the central processing capacity, 32K vs. 16K; much more magnetic disk storage, 30 million characters on each of two changeable packs vs. only 4.2 million per pack; and a faster printer, 1,200 line/min vs. 450 alpha and 900 numeric. In addition, the central memory can be increased to 128K and more disk spindles can be added.

Phillips stressed, too, the flexibility of input mediums; magnetic tape, punched paper tape or punched cards. Since the departments prepare their own data, they can select the one most convenient for them, and some, in fact, use two.

Wears Fiscal Hat

When wearing its fiscal hat, the computer center maintains property assessments, applies tax levies to them, prepares the public tax roll and individual bills, notes payments and records encumbrances against the budget plus payments of invoices. All necessary reports and miscellaneous notices are produced by random-access searches of the magnetic disk files.

Providing DP to the assessor, tax collector and auditor-controller is only part of the story. Beyond that, the computer center prepares lists of prospective superior court jurors, the voter index, polling place notices and the aid roll for welfare payments.

It provides payroll and encumbrance budget accounting to the County Office of Education, gives the Department of Public Works a detailed daily picture of every facet of its operations and keeps tabs on vehicle operation costs and crime and patrol activity for the sheriff's department.

"We're not maintaining a wanted file yet," Phillips said, "but we break down the time officers spend on patrol and in filling out reports or making court appearances. More importantly, the computer can determine specific needs, say three cruisers in the Truckee area on a Saturday night and only one for the western portion of the county."

The NCR thermal printing input/output writer is used to query the county data base.

IBM Cuts Model 20 Purchase Price

ATLANTA – IBM recently dropped the purchase price of its 360/20 line by as much as 40% on some models.

The highest percentage of savings is on the 360/20 Model 5 with 32K memory, now being sold for $63,470, compared with $105,790 before the price reductions.

The 360/20s are now being handled by IBM's General Systems Division.

CRU Meter Monitors Productivity

CLEVELAND – A compact computer measurement device that signals the operator his computer has fallen below predetermined loading levels is available from CRU, Inc.

Applications are expected to cover the IBM 370/135 and larger computer systems which have the capability of processing more than one job at a time at the operators' discretion.

Called the Capacity Meter, it represents a form of feedback control for DP. Response by either operators or their supervision is needed to close the loop.

The computer operator is also aided by knowing the percentage utilization of the major computer resources on a real-time basis, the vendor said.

Management can use the meter to accumulate production history and enforce standards. Nearly five years of comparative production standards are part of a reference guide that directs the user through 36 weeks of in-house measurement activities.

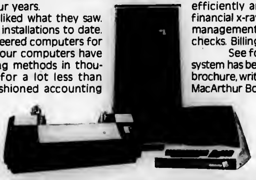
By emphasizing statistical techniques and sampling methods, the manager can assure himself that the desired production levels established will meet the commitments of the data center, CRU said.

Differences between this system and other computer measurement devices is that it minimizes the amount of data taken directly from the computer but emphasizes the broadest possible view of computer productivity – which includes hardware, software and people, CRU said.

Thus, a system of control-like standards can be implemented for all involved, ranging from monthly statements to minute-by-minute monitoring.

The meter can be installed on the computer console or placed on a supervisor's desk.

Prices start at $4,500 from the firm at 4650 W. 160th, 44135.



Chrysler Moves to Computer-Aided Design — Part 1

Task Force, Education Solve Nontechnical Problems

By Dennis M. Walker
Special to Computerworld

DETROIT, Mich. – Chrysler Corp. is implementing an extensive computer-aided design (CAD) system after a five-year internal education program that involved all employee levels – from top management to bargaining-unit draftsmen.

Although Chrysler used CAD and computer graphics during the mid-60s, the company discovered early that introducing this new technology meant facing up to some nontechnical problems.

These problems had to be solved if the firm's CAD program, called Chrysler's Organized Numerical Control and Engineering Programming Technique (Concept), was to achieve its long-term potential for increased efficiency and improved productivity in engineering design and drafting applications.

When Chrysler began tackling its CAD problems in early 1969, the basic issues the firm had to deal with were: a lack of CAD acceptance by production drafting room personnel; the possible inability of the organization to adapt to the changes implied by CAD technology; and the cost of a parallel "prove out" prior to implementation within a production operation.

> *"The key to solving . . . problems . . . was the creation of a mixed-background task force. This group has evolved into a standing CAD coordinating committee, which continues to meet once a month."*

There was also a lack of objectivity on the part of both the system developers and the potential users caused by limited exposure to "the other guy's" problems and the necessity for users to queue for limited hardware resources in the early implementation stages.

And there was also the question of applying CAD in a totally unionized drafting room operation.

The key to solving these problems at Chrysler was the creation of a mixed-background task force. This group has evolved into a standing CAD coordinating committee, which continues to meet once a month (a rate much lower than during the early development and implementation stages).

Draftsmen, Supervisors Accept CAD

From 1969 to 1974, Chrysler attempted to gain wide-ranging acceptance of CAD at every level (upper and middle management, as well as line draftsmen and their supervisors) through the firms' Concept design and drafting language.

This language, which users could access on existing terminals, proved an inexpensive way for Chrysler to introduce CAD to a large number of people.

This interpretive-type language provided designers and draftsmen with an engineering-oriented data management system which dealt with geometric entities; an interface to digitizing and drafting hardware; computer equivalents for standard drafting procedures; a linkage to available structural analysis software; and the beginnings of an interactive graphics system.

Chrysler now has trained more than 200 people (100 draftsmen and an equal number of drafting room supervisors and engineers) in the use of Concept.

General Rules

As one begins to implement a graphics system of this size and complexity, it is well to establish the following general rules:

- Understand the user's needs.
- Maximize system flexibility.
- Minimize total system costs.

Total system costs must take into account hardware and software development as well as ongoing usage or execution costs. The last item includes central processing, communications, data storage, maintenance, documentation and training costs.

The sound basis for continued program development was a list of graphics applications requested from each major engineering activity to typify specific needs. The CAD coordinating committee made this task easier.

Four broad application areas emerged. They were computer-aided design and drafting; structural modeling and analysis display; creation and placement of two-dimensional shapes; and statistical and numerical analysis.

The development team then began to write a user's manual for each general application area. This was reviewed by potential users prior to development of application programs.

Time-Sharing Orientation

With the acceptance of CAD, Concept began to move from a batch to a time-sharing orientation. Certain functional operations were reprogrammed to take advantage of the Tektronix 4010 and 4014 time-sharing graphic consoles. The level of CAD acceptance can best be measured by the large number of applications generated within this time.

Among them are: air conditioning plumbing layouts; backup lamp visibility studies; constant section moulding design; door swing studies; exterior lamp optics design and evaluation and fuel line tubing details.

In addition, instrument panel surface generation; interior trim cover drawings (styling); lamp reflector (parabola) design and steering column layout became frequently used applications.

Finally, transmission shift linkage, true clearance layouts, wheel envelope layouts and windshield wiper pattern layout systems were also started.

Throughout development of the Concept system, extreme program modularity was required. That is, all Concept language functions were developed in terms of analytic sections and a language interface. Chrysler intended that language interfaces would be replaced with real-time interactive graphics interfaces. This would occur when CAD was accepted to the point that a wide-ranging interactive graphic implementation was possible.

Dennis M. Walker is manager, Engineering Systems Development Department, Technical Computer and Instrumentation Center, Chrysler Corp.

Part II will examine the hardware and software choices Chrysler made in implementing its CAD program.

Minis Explained – Part 2

Software, Upkeep Easy If User Follows Guidelines

By Leonard Farano
Special to Computerworld

Minicomputers are making a dramatic impact in the commercial DP marketplace. Software and maintenance are major areas of concern for the user anticipating a minicomputer installation, but can be readily understood if a few guidelines are kept in mind.

A minicomputer's operating system is usually what spells the difference in its overall performance capabilities. Even the smallest of minis usually have reasonably sophisticated operating systems.

The operating system should permit the system to be relatively transparent to the user. It must efficiently utilize disk storage and provide good screen response time.

A one-terminal system with small disk capacity and one printer has operating system requirements that are relatively simple. More terminals and disks, however, require multiterminal, multiprogramming activities to occur simultaneously, and the operating system's demands increase dramatically.

The vendor should be able to state what capabilities are provided, with some guidelines for systems performance and degradation with increased device usage.

Most minis support their own specialized Assembler languages or macro assemblers. These are often difficult to learn and program and provide poor documentation. Some "minis" and most "midis" and "maxis" support a version of Basic with commercial extensions.

This is a relatively easy, interactive language to learn and program. Some midi and maxi vendors offer RPG-II compilers and/or subsets of Ansi Cobol. These languages can be quite attractive from a programming and documentation standpoint, but will generally be less efficient.

Have the vendor list those languages his system supports and indicate what is the minimum configuration needed for efficient usage of the language.

The vendor should indicate what basic utility programs are made available to the user. These include sort/merge programs, disk copy and organization programs and debugging aids. Most minicomputer applications do not sort data because files are usually disk-resident.

It is important, however, for the vendor to have an efficient access method for retrieving data from disk. This access method should be transparent to the user.

Application Software

Minicomputer vendors, in general, are "iron" salesmen. They sell hardware and the appropriate systems software to make that hardware functional. Most do not provide any application software.

Those that do usually limit that software to extremely basic accounting functions which include order entry, invoicing, accounts receivable, sales analysis and inventory control. Therefore, the user must be prepared to develop specific application software in-house or acquire such software through software vendors with both minicomputer expertise and related application experience.

This latter step can be quite attractive if there is no relevant experience on minicomputers in-house or if the minicomputer represents the first use of computers by the customer.

The application software must be completely transparent to the user. There should be a basic application selector subsystem (screen display) which allows the user to select the specific function he wishes to perform and then leads him through the processing steps.

If the vendor supplies application software either through his staff or through a software subcontractor, ask him to specify in detail what it will consist of and

(Continued on Page 28)

	'Mini'	'Midi'	'Maxi'
Operating Systems	Single Terminal Multiterminal	Multiterminal Multiprogramming	Multiterminal Multiprogramming Multitasking Time-Sharing
Languages	Assemblers Basic Fortran	Extended Basic RPG-II	Extended Basic RPG-II Cobol Data Base Management
Application Software	Poor to Fair Basic Accounting	Mostly Tailored Software Vendors	Mostly Tailored Software Vendors
Price Range (Full System Purchase in Thousands)	$20 to $40	$40 to $100	$100 to $300
Examples of Minicomputer Systems	PDP-8 Nova 1200 Interdata 74 Datapoint 2200 Basic/Four 350, 400 Singer System/10 IBM System/3 Model 6 IBM System/32 Lockheed System III Microdata 1600 Qantel 1100/1200 Varian 620/f-100 Burroughs B1712, B1714 Ultimacc DEC Datasystem 310	PDP 11/40 Nova 840 Interdata 70 Basic/Four 500 IBM System/3 Model 8 Microdata Reality Datapoint 5500 Varian 72, 73, 74 Burroughs B1726 NCR 50	PDP 11/45 PDP 11/70 Interdata 80 IBM System/3 Model 15 Hewlett-Packard 3000 Burroughs B1728 NCR 101 DEC Datasystem 570

Today, minicomputers can be broken down into three subclassifications.

AP's DP Manager Says

Dedicated Systems Need No 'Monkeying Around'

By Patrick Ward
Of the CW Staff

NEW YORK – One of the advantages of a dedicated minicomputer system "is that once you get it running, you don't have to monkey around with it," observed Jerome J. Fraenkel, DP manager for the Associated Press (AP) at a recent Computer Caravan session here.

With 112 bureaus in the U.S. and some 8,000 terminals, the news service began using minicomputers in dedicated systems eight years ago, when it wanted to install some labor-saving systems across the country.

Initially, AP asked IBM what equipment it had for the job, and IBM pointed to its 1800 at $200,000. But a Digital Equipment Corp. PDP-8I to handle the same application cost only $80,000, Fraenkel said.

That minicomputer also needed less space and electrical power and didn't require special air conditioning, Fraenkel recalled. Today AP has a network of PDP-8Is across the country.

The news service also uses PDP-8E processors as controllers for text-editing terminals. Other minis handle hyphenation and justification of news stories.

Fraenkel also favors the "distributed processing" concept of using minis to lighten the load – and forestall upgrades – of heavily burdened central mainframes.

And an intelligent minicomputer front end can spare the mainframe such tasks as code conversion, message assembly and dealing with noncompatible terminals, he said.

A mini, on a separate power supply from the host and protected with an uninterruptible power supply, can log data onto disk for several hours while the host is down, he added.

Held Onto 360s

Fraenkel said AP had once ordered some IBM 370s to replace 360s, but when the economic crunch came along the news service decided the 370s under OS and CICS would not bring that much of a throughput gain in view of their much higher cost.

Instead AP held onto its 360s and off-loaded some of their tasks to minicomputers. The news service plans to eventually replace the 360s with Digital Equipment Corp. Decsystem-10s, retaining the minis as front ends "even though they'll be loafing," Fraenkel said.

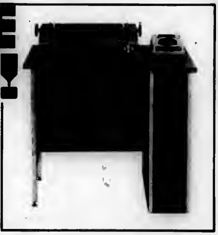
Minicomputers do have their drawbacks, the AP user said. Although it is getting simpler, minis are not the easiest things in the world to program, he remarked. At present, he has one programmer who serves 25 minis by mailing programs on tape to remote sites along with instructions on when and how to input the program.

In this regard, Fraenkel thinks it's not a good idea to switch programmers from large machines to minis and back again. That only confuses things and, since most minis lack the higher-level languages of larger machines, a DP shop's wholesale switch to them would require a lot of staff retraining, he added.

Minis are also not the best gear for a large data base system, Fraenkel said, but added he felt this was about the only area where they are inappropriate.

Tracing a minicomputer's problem can also be harder because "there are less bells and whistles on them," Fraenkel said. "If it is something within the CPU itself, it will take longer to diagnose and repair" than with the typical larger system.

AP handles maintenance problems at the remote sites with sets of procedures to help the users spot problems and locate the cause.



Software, Maintenance No Problem With Guidelines

(Continued from Page 27)

what the costs of development and installation will be. The hardware vendor may recommend software vendors who have performed such development work and with whom the customer must contract separately.

Some software vendors will purchase the hardware from the vendor and provide it together with all appropriate software on a turnkey installation basis. They may even have the hardware delivered to them during the development stage and redeliver to the customer as a ready-to-install system.

This has the advantage of allowing the customer to deal with one vendor whose primary objective is to install systems on minicomputers rather than sell minicomputers.

The applications which are performed on minicomputers are limited by the number of devices, number of simultaneous users and on-line storage requirements. Therefore, generally speaking, applications like purchase order management (point-of-receipt) and big-ticket reservations systems would more likely be performed on midis or maxis than on minis. Minis could be successfully used in some point-of-sale applications and for import processing. Again, transaction volumes and number of users serviced must be considered carefully.

Service and Maintenance

It is extremely important that the equipment vendor has a service organization in the user's geographic area that is capable of supplying high quality, fast-response maintenance to the hardware. Most minicomputers are made of components manufactured by companies that specialize in specific hardware. It is quite common to find each of the basic elements – CPU, video display, disk and printer – manufactured by different vendors and marketed by a single minicomputer resource.

The vendor should state whether he will service all components or whether he has a separate service agreement with the original equipment manufacturer.

Some minicomputer vendors have contractural agreements with independent service organizations who service a wide variety of equipment. Have the vendor define exactly which service arrangement will cover the equipment.

One should not expect the same response time from minicomputer vendors as is normally available from large mainframe vendors such as IBM. Generally speaking, however, since most components are used extensively in both mini and traditional computer equipment, their reliability is quite high and maintenance experience has been excellent.

Most systems, because of their solid-state technology, have very low mean-time-to-repair statistics; therefore, the critical item with regard to system malfunction becomes response time to the service call. Have the vendor state the expected service-response time. Two to four hours is a typical range stated by many vendors.

Conversion and Installation

Since most minicomputers are replacing operations that were heretofore manual, the conversion must be very carefully planned. A proper system test with full volume data must be successfully completed prior to putting any application on the air.

Have the vendor state what capabilities are available for testing the system before installation, what allowance for getting the system on the air after installation and before payment and what training will be given to user staff. The vendor should also state in detail all environmental conditions which must be met to ensure successful operation of the system.

These should include electrical requirements, air conditioning, humidity and space requirements. Most minis require little or no additional electrical or air conditioning capability and will fit into relatively small areas. Midis and maxis, however, often require additional power and sometimes additional air conditioning.

Farano is executive vice-president of Gambit Management Strategies, Inc. in New York.

Entry-Level Systems Expand GRI Offerings

NEWTON, Mass. – GRI Computer Corp. has developed two low-cost data entry-level systems as adjuncts to its line of distributor-marketed, mini-based small business systems.

Both of the additions are expandable into larger System 99 configurations and include the compiler for GRI'S Interactive RPG-II. The entry-level configurations will be marketed through GRI distributors as low-cost turnkey systems for business use, GRI said.

Designated Entry One and Entry Two, each system consists of a 16K word processor, the GRI 99/50 mini, housed with a 5.3M-character disk storage subsystem.

Entry One utilizes a Diablo Hytype printer with an integral keyboard. Entry Two includes an 80-column matrix printer and a 640-character keyboard/display.

The systems are expandable in terms of core, disk storage and peripheral devices, GRI said. The processor's core can be increased to 32K words and storage is expandable with up to four disk drives of 5.3M-bytes each.

In addition, the systems can be furnished with 80- and 96-column card equipment and magnetic tape stations for operation in a batch-processing environment, the firm added.

The systems will be priced starting in the low $30,000 range, depending on the application programming required. GRI is at 320 Needham St., 02164.

Monolithic Memories Plug Into DEC PDP-8s

ENGLEWOOD, Calif. – Monolithic Systems Corp. has a semiconductor memory system that plugs directly into Digital Equipment Corp.'s PDP-8E, 8F and 8M and is said to be half the price of conventional core add-on memory.

The Monostore V/PDP-8EFM add-on memory board is available in either 4K or 8K versions. Each 8K board requires only one slot in the PDP-8E chassis; four boards can provide the maximum machine memory capacity while leaving room for additional peripheral boards.

All systems carry a one-year warranty on parts and labor. Price in single quantity is $560 for the 4K and $995 for the 8K system from the firm at 14 Inverness Drive East, 80110.

On-Line System Rids Textiler Of Inventory Time 'Surprises'

NEW YORK – "The textile industry has always had very serious difficulties in keeping an accurate perpetual inventory," according to William Levin, president of Gold Mills, Inc.

"In all too many instances," Levin said, "what's on record does not match what is physically in the warehouse or, sometimes more importantly, what is in process. One then is confronted with an unpleasant surprise at inventory time."

Gold Mills has solved that continuing problem with an on-line interactive minicomputer system that not only maintains an accurate inventory from moment to moment, but also produces significant cost savings in several different parts of the company.

Built around three minicomputers from Interdata, the Gold Mills system was installed and is managed by G&L Computer Corp. of New York City. The system links Gold Mills corporate headquarters here with its knitting and dying facilities in Pine Grove, Pa.

At Gold Mills, the hardware in the G&L system includes three Interdata minis: two Model 70s and one Model 5, each with 32K bytes of core memory. The Model 5 serves as the communications interface between the Model 70s and terminals in Pennsylvania and New York. There are four 2.5M-byte disk memories, a 29M-byte disk memory and five matrix printers.

The CRT terminals at the manufacturing plants in Pennsylvania and at Gold Mills headquarters each contain 2K bytes of read-only memory and custom-installed features such as a transmit light that locks the keyboard while the operator awaits a response to his most recent query or data entry.

The terminals in Pennsylvania transmit data to the Model 5 here over two dedicated telephone lines, each of which transmits about 10M bytes of data per day at a rate of 4,800 bit/in. Similarly, data flows from the terminals in New York to the plants in Pennsylvania. Transmission rate within the New York headquarters, from terminals to the Model 5 minicomputer, is at a rate of 9,600 bit/in.

Levin explained achieving an accurate perpetual inventory was "almost a hopeless task for the textile industry prior to the arrival of computers."

In the case of Gold Mills, one of the problems of achieving an accurate inventory focused on that group of employees known as converters, men and women who convert a customer's order into appropriate manufacturing and distribution instructions for the Pennsylvania plants.

Prior to the installation of the minis, it was entirely possible for these converters, sitting at adjacent desks, to order out the same goods more than once, Levin reported. And it might then be weeks before the accounting department straightened out the paperwork to resolve the discrepancies.

Now, said Jules Grandonico, president of G&L, "a converter sits at a CRT terminal that is on-line to the minicomputers and their auxiliary memory disks. Every transaction is immediately entered into the system, which will then block any and all subsequent attempts to duplicate orders from another converter."

$75,000/Year Savings

Converters are not the only employees who are on-line to the minis. Grandonico pointed out the Invoice Department at Gold Mills headquarters formerly consisted of eight clerks who were "always behind on their manual processing of paperwork. Now, one Gold Mills clerk and a terminal produce current invoices every day. Indeed, that one clerk usually finishes the day's invoices before the close of business."

Estimated net savings to Gold Mills in the Invoice Department alone is more than $75,000/year, plus the added dividend of improved performance, he said.

Because the manufacturing plants in Pennsylvania operate three shifts per day, seven days a week, there is a constant flow of data to New York. "We never close," Grandonico said. "The system is always working."

Levin commented: "With this system, I can ask the terminal at my desk what is in my finished inventory, what's in the dye house or the status of a customer's contract, and I will get an answer that is accurate and literally up-to-the-minute or even the last few seconds. We also can know exactly where every carton of goods is in the warehouse, and even every piece in a broken carton.

"This kind of knowledge enables us to turn our inventory perhaps one and a half times more each year than would otherwise be possible."

CI Notes

Honeywell Expects Big Dip In First-Quarter Earnings

MINNEAPOLIS – Honeywell, Inc. expects first-quarter earnings to be sharply below those of the first quarter of 1974, according to its president, Edson W. Spencer.

There has been a substantial decrease in the level of outright sales and conversions in the computer area, although rental and service revenues continue to increase, he said.

Although backlogs are ahead of a year ago in most sectors of the controls and computer portions, Spencer said he expects difficult business conditions to continue at least through the first half of the year.

In the controls business, the continued low demand for residential and Micro Switch products are contributing to reduced earnings.

But Spencer said he sees easing raw material prices and improved delivery from suppliers as indications inflation is abating. Honeywell's efforts to reduce inventory are improving cash flow, he added.

Data General Files Countersuit

SANTA MONICA, Calif. – Data General Corp. has filed a countersuit against Keronix, Inc., charging unfair competition, disparagement and injurious falsehood.

The suit, filed in the Superior Court of Los Angeles here, asks general and exemplary damages plus court costs, with amounts to be listed later.

Keronix is suing Data General, charging it with conspiracy to commit arson and to wiretap Keronix's telephones [CW, Jan. 22]. The Keronix suit asks $55 million in actual and punitive damages.

Firms Close Plants Temporarily

Temporary plant closings are in the news again. Tektronix, Inc. plans to close its Beaverton, Ore., plant for three weeks during the summer.

Decision Data Computer Corp. halted operations for two weeks beginning March 24, citing reduced order rates in December and January. Although February's rate was the highest in the firm's history, it did not compensate for the previous decline.

California Computer Products closed its Anaheim, Calif., plant for one week last week, as it did at Christmas.

Peripherals General Resurfaces

CHERRY HILL, N.J. – Peripherals General, Inc. has surfaced again, after abrubtly closing its doors in July 1973.

The firm's current offering is the Model 844 disk system for the Honeywell (GE) 400/600 systems. Future plans call for double-density 3330-type drives.

Interest at All-Time High

Demand Drives Used 360 CPU Prices Up

By Nancy French
Of the CW Staff

Interest in used computers – especially IBM 360/50s, 60s and 65s – is at an all-time high, with tightening supply and growing demand driving prices up as much as $35,000 for 50s and $65,000 for 65s in the last six months, a recent *Computerworld* survey found.

According to Tom Takash, director of equipment sales for Greyhound Computer Corp., shortages have increased the value of larger 360/50s with 512K memory, for example, from about $100,000 six months ago to $130,000 to $135,000 today.

The 512K Model 651, in a typical configuration with three selector channels and a multiplexer, is going for $350,000 to $360,000 when six months ago top price was about $285,000, he said.

Dealers nationwide agreed, attributing the trend to two factors:

- Economic conditions which are making users more cost-conscious.
- Growing sophistication of users who know what they want and how to shop the third-party marketplace.

John Fermanis, marketing representative for Comdisco, explained that "the data base idea has really caught on and that means a system with 1M byte or more of memory.

"A 360/65 with two to three megs on it allows you to run with real memory what IBM is claiming can be done on a 370/145 or 158 with virtual for about half the price," he said.

People are interested in these kinds of savings – "and it's not just the recession. We've become an accepted part of the industry," he said.

'More People Purchase-Oriented'

George Akin, vice-president of sales at TLW Computer Industries, Inc., an Atlanta-based company that buys equipment to refurbish and sell in accordance with user specifications, pointed out "management is looking at the bottom line for a number of reasons, and it's making decisions on cost. That means a lot more people are purchase-oriented."

Glen Walden, president of Computer Wholesale Corp., a company that buys batches of IBM equipment for resale to other dealers and leasing companies, said "we're selling stuff before we've even picked it up.

"Prices are up for all used equipment – from 360/50s and 65s to 2314-type disk drives to card I/O equipment," he explained.

"As users accrue enough credit options to make purchase attractive, a lot of IBM 370/158s are coming into the marketplace, too, and demand for these is also very strong."

After users purchase their machines from IBM, they often make them available to used equipment dealers, he said.

Demand is also increasing for 360/40s – with prices up 5% to 10% over those of four to six months ago, Walden said.

Ken Bolden, president of Econocom, Inc., based in Memphis, attributed increased prices to the gradual disappearance of the used computer "surplus" caused by Itel's decision to sell its 360 portfolio a year ago.

Another positive sign Bolden noted is the drop in the prime interest rate. "It doesn't matter how good a deal you can offer a company if it can't get the money to buy," he said.

William McGhie, president of Computer Brokers, Inc., also in Memphis, echoed the remarks of the other dealers, adding, "Last year, before the recession, a customer who wouldn't use third-party equipment to save $300/mo is paying a great deal of attention to third-party prices now."

360/20 Upswing

McGhie predicted an "upswing in 360/20 sales as a result of IBM's recent 20% to 40% reduction of the 20's purchase price.

"Anytime IBM reduces its price, it stimulates the marketplace because users who consider buying start looking at all their sources, and we end up getting a little piece of the action," he explained.

However, the market is softening for the used 1130s, McGhie noted, since new small systems are taking their place.

General Automation's 1830, for example, is giving IBM's 1130 a run for its money. "The 1830 can do everything the 1130 can do – and then some – for the same dollars," he explained.

Few dealers handle used gear manufactured by companies other than IBM. But Bill Grinker, executive vice-president of American Used Computers, said American Used "handles gear from about 50 different manufacturers."

Computer Wholesale Corp. also handles other gear, especially that made by Univac and Honeywell, but by special order only.

Computer Brokers' McGhie remarked that, as far as he was concerned, if somebody wants to sell him gear other than IBM, his first question would be "How much does it weigh, or does it have any gold or silver contact points?"

"It's IBM's service policies that make this business good," admitted TLW's George Akin. "We can guarantee IBM maintenance to all our customers who want it."

Firm-Term Multiyear Contracts Proposed for Federal Agencies

WASHINGTON, D.C. – A bill to permit government agencies to obtain DP equipment, business machines and service contracts under firm-term multiyear contracts, estimated to save the taxpayers as much as $75 million over the next two years, has been introduced by Sen. Lawton Chiles (D-Fla.).

The law would permit the government to take advantage of the same savings commercial users achieve through fixed-term multiyear contracts rather than leasing DP equipment on a costly year-to-year basis.

Existing federal law requires agencies wishing to lease equipment under multiyear contracts to set aside in advance the funds to finance the duration of any contract, thereby tying money up years ahead of actual vendor payment.

Expensive one-year leasing is the alternative now used by most agencies.

Chiles' aim is to get the government to run itself "like a business, which it is, and begin employing some of the same cost-saving practices."

Agencies would lease DP equipment through the General Services Administration's (GSA) revolving fund provided under the Brooks Bill, a law passed several years ago to encourage efficiency and cost-effectiveness in the procurement and use of DP equipment.

The same bill passed the Senate last year, but was never taken up in the House of Representatives because of the crush of last-minute business.

Honeywell Rumored Selling Foreign Arm

MINNEAPOLIS – Rumors are flying fast and thick about the possible disposition by Honeywell of Honeywell-Bull and/or its domestic computer operation.

One version predicts Honeywell will sell its installed base to Univac, its peripherals operation to NCR-Control Data Corp.'s joint Computer Peripherals, Inc. and Honeywell-Bull to Unidata.

This plan prompted one observer to say, "Univac looks like it's trying to become the biggest used computer vendor."

Another version calls for the merger of Honeywell-Bull and Compagnie Internationale pour l'Informatique (CII), one of Unidata's members.

Adapso Opposes Licensing, Urges Caution on Privacy

• Calls for Voluntary Standards

MONTVALE, N.J. – The DP industry should "continue to develop and publicize ever higher voluntary standards of performance and product and permit the free marketplace to be the determinative factor," rather than relent to governmental regulation of computer professionals, according to Jerry L. Dreyer, executive director of the Association of Data Processing Service Organizations, Inc. (Adapso).

Adapso opposes governmental regulation of computer professionals, whether through federal, state or local licensing, certification or otherwise, he stated. "It believes such regulation inhibits free enterprise and is ineffective to accomplish the stated purpose of improving service to the public," he added.

"Despite the most laudatory stated purposes, licensing all too frequently results primarily in increased price to the public, without improved product and performance. Indeed, sometimes even quality suffers," he noted.

"Only after all efforts to achieve voluntary standards of high-quality performance and product have been exhausted can there be a sound basis for government interference and control through regulation," Dreyer said. "Adapso hopes that time will not come and urges its industry to continue to work with it in the greater public interest."

• Advocates Impact Statements

MONTVALE, N.J. – Lawmakers setting privacy standards for personal data banks should do so only after careful consideration is given to benefits as well as detriments of these systems, according to Jerry L. Dreyer, executive vice-president, Association of Data Processing Service Organizations (Adapso).

"Both government and society in general have been evaluating the social impact of complex computer technology on the basis of inadequate and often simplistic considerations," he said.

Problems concerning the accumulation, storage and dissemination of information can be properly identified only after full examination of the relevant facts based on a privacy-impact statement for every mass data bank subject to each government's jurisdiction.

The impact statement should set forth in detail all facts applicable to the data bank's operation, including its reason for existence and safeguard and security systems.

While society is beginning to appreciate the potential threat of mass data banks to privacy and freedom, much attention to date has "overlooked major adverse side effects and important benefits jeopardized as a consequence of the remedial action," he said.

As an example, Dreyer pointed out current legislative concern over the individual's right to know the contents of secret files led to enactment of a requirement that schools and universities open their files to students and parents.

Because this statute was inadequately discussed before enactment, Congress failed to understand that the uncontrolled disclosure of such information would have inevitable side effects.

Semis Seen Gaining Edge Over Core Because of Increased Reliability: HP

CUPERTINO, Calif. – Increased reliability will prove in the long range to be a more significant advantage of semiconductor memory compared with core than its rapidly declining price, observed Ed McCracken, marketing manager of Hewlett-Packard's (HP) Data Systems Division.

Although the decision to design the 2100MX series around 4K chips was a big gamble, using solid-state memory was really the right choice, he said.

"We're fortunate to be able to compete in what some have called a price war without lowering our margins," McCracken remarked.

Even after HP announced its most recent price reduction of 10% on 2100MX memory, its supplier, Texas Instruments (TI), lowered costs still more, he said.

And prices will continue to go down, McCracken predicted. Within a year, he sees semiconductor memories costing less than half their current price.

The gamble, he explained, resulted from being tied to a single supplier.

Although HP designed the unit for a number of suppliers' chips, TI, he said, is the only maker whose product can meet HP's tests in quantity.

Happily, TI is able to supply HP with all the 4K chips it can use. Eventually, HP expects to utilize a smaller size 4K chip. TI's chips currently have 22 pins.

If HP had had to resort to 2K chips, he said, it would have lost its price/performance edge, as a system would have required another box to incorporate an equivalent amount of memory, and that incurs costs.

HP's tests have shown its semiconductor memories to be 50% more reliable than its previous core, he said. And within six months to a year they should be twice as reliable as core, he said.

This means a far wider range of applications for minis, as well as reduced service expenses, he said. HP current tests show 5,000 hours as mean time between failure, he said.

The complexion of the future mini market will change. Within three years, he predicted, there won't really be a viable market for a maker of mini boxes such as the OEM minis HP turns out currently.

Instead, the action will be at the lower end of the scale such as with microcomputers and at the upper end with mini systems, including applications software and peripherals.

McCracken indicated HP will definitely be in the mini systems area. The firm's policy, he said, is to reserve entry into an area until it feels it has a "technological contribution" in that field.

If its SOS development efforts are fruitful, that would warrant HP's entry into the raw microcomputer area, he admitted. So, HP is keeping its options open in what continues to be an "unstructured market."

Floppy Business Gaining Steam

The floppy disk business must be picking up steam, judging from the increased pace of contracts being issued.

Linolex Corp. has ordered over 1,000 floppy disk memory systems from Innovex Corp.

Shugart Associates received a contract for its SA900 floppy disk drive from Wang Laboratories for use with Wang's forthcoming products – small processors and data entry stations.

Pertec Corp.'s Peripheral Equipment Division has signed a $700,000 OEM contract with Advanced Electronics Design, Inc. to supply FD400 flexible disk drives over a two-year period and, in a separate move, has signed a $1 million OEM contract with Systema Engineering Laboratories to supply tape transports and disk drives.

Contracts

The Systematics Division of General Instrument Corp. has received a contract totaling more than $1 million from Litton Industries' Data Systems Division for militarized head-per-track disk units.

Computer Network Corp. has been awarded a contract from the U.S. Railway Association for time-sharing and remote batch services to be used for railway planning and analysis studies.

Trilog Associates, Inc. has signed a long-term contract with the Montgomery County, Pa., Intermediate Unit to run its computer center and provide DP business office and administrative services to participating school districts.

Distronics Corp. has signed a DP service contract with Ellis & Ford Manufacturing Co.

Small Systems Market Set as Seminar Topic

NEW YORK – Frost & Sullivan, Inc. will hold a seminar on the small business computer systems market April 4 at the Harvard Club here.

Speakers will include David Ferguson, publisher of *System/3 World*, and Theodore Leventhal of Consolidated Computer International, Inc., in addition to Lawrence Feidelman, project director for Frost & Sullivan.

Special emphasis will be placed on the impact of the IBM System/3 and System/32 in the domestic competitive environment. Other topics will focus on the industry in terms of existing systems, key application areas, peripherals, software and present and future U.S. markets.

OEM Peripherals Maker Swings to End-User Mart

MARINA DEL RAY, Calif. – What does an independent peripherals maker do when its OEM mainframe customer decides to make that product line in-house?

Sell it to the end user, is the answer given by Graner Thorne, manager of end-user marketing at Ampex Corp.

That's what happened after Digital Equipment Corp. stopped buying from Ampex and began manufacturing its own add-on memory as part of a move toward vertical integration.

Business has been so good with the ARM-10, a 128K to 256K memory for the DEC KA 10 and KI 10 processors, Ampex brought out the smaller ARM-10s to expand its participation in the DEC market.

The ARM-10s come in increments of 32K, 64K or 128K, but most orders are for the 64K size, Thorne added.

One unit has been running successfully since November, and the first production unit was installed in February, he said.

An added benefit to being in the DEC market is customers usually purchase rather than lease their products, he said.

Ampex also supplies a line of add-on memories for IBM 360s, the 370/155 and 165 as well as Univac 1106 and 1108.

There are no semiconductor memory products from Ampex yet, although Thorne said he expects the firm will eventually offer them, but not within the next year.

The Memory Market

Thorne termed the memory market "very good," adding it is "very competitive."

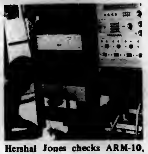

Technician works on Ampex Extended Core Memory unit.

But being in the memory market also provides diversity, generally governed by the characteristics of the particular mainframe's customer base.

The market for the 165 has been very good, but the 155 only "so-so." These systems have tended to be replaced more frequently, he noted.

On the other hand, the 1108 has been a "super" market. It has grown slowly, but very consistently.

Univac users tend to have long-term leases and grow more cautiously than IBM users, he said. For instance, an IBM installation might order four memories at one time, whereas a Univac site would order one, then a while later order three more.


Hershal Jones checks ARM-10, an add-on memory for Decsystem-10.

Ampex provides maintenance for its memory systems at end-user sites, although DEC customers tend to perform their own, he said.

The firm also has several disk drives designed for IBM, Univac and DEC users. Products include single- and double-density 2314 types as well as 3330 types and the DS 8430, which is a Univac Fastran II replacement on the 1106, 1108 and 494. There are also single- and double-density disks for the Decsystem-10.

Tapes 'No Go'

MARINA DEL RAY, Calif. – Although a variety of tall and short, small and large disk drives are being manufactured here at Ampex, none are being made for the end-user market.

The firm felt its expertise is in core and disk, explained Graner Thorne, manager of end-user marketing. When it looked at the continuing cost of 3420 (types) and changes that would have been needed to go to 3,200 bit/in. and 6,250 bit/in., the "end-user tape operations were a lesser priority," he said.

Previously, Ampex had been turning out 729- and 2401-type drives.

Deere Elected Head Of I/O Group for '75

STAMFORD, Conn. – The Input/Output Systems Association has elected C. Thomas Deere, vice-president, marketing, Data Card Corp., as president for 1975.

Deere expects the Input/Output Systems group to establish a broader base this year. "We changed the name from the Data Processing Supplies Association," he said, "to appeal to a wider range of the computer peripheral field."

The organization of peripheral manufacturers and end users in the DP industry is composed primarily of U.S. firms, but has been gaining members in other countries. An international meeting is scheduled in Spain for May.

MOVING?

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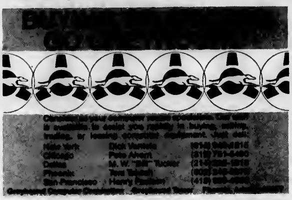

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Tymshare Reports Record

CUPERTINO, Calif. – Tymshare, Inc. showed record earnings and revenues for the year ended Dec. 31.

Earnings, including a $150,000 tax credit, totaled $3.3 million or 89 cents a share compared with $2.7 million or 71 cents a share last year when the tax credit was $611,000.

Revenues jumped 32% to nearly $46.6 million.

Amounts for both years include results of operations of United Data Centers, Inc., which was merged with Tymshare in December and accounted for as a pooling of interests.

Pertec Shows Strong Second Quarter

EL SEGUNDO, Calif. – Pertec Corp. reported a strong second quarter, aided by sizable contributions from its Peripheral Equipment Division and black ink from its Business Systems Division.

President Ryal R. Poppa said the slowdown in the mini market, which caused the firm to revise downward its original projections for its Peripheral Equipment Division. seems to have stabilized.

During the six months, Pertec earned $960,000 or 31 cents a share compared with $661,000 or 22 cents a share in the same year-ago period, when there was a $524,000 loss from discontinued operations.

Revenues for the half year rose to $21.5 million from $14.1 million in the same period last year.

During the second quarter, earnings more than tripled to $619,000 or 20 cents a share compared with $203,000 or 7 cents a share, including a $264,000 loss from discontinued operations.

"In the past, the Business Systems Division has impacted the overall profitability of the firm as a result of heavy development and promotion costs associated with new products, in addition to frond-end manufacturing costs incurred to meet a steeply increasing sales demand," said Poppa.

"We believe this contribution will improve in the future quarters' operations," he added, noting demand for the shared processor, CRT terminal and computer output microfilm system continues to grow.

During the second quarter, Pertec renegotiated its line of credit and now has funds up to $10 million available for working-capital purposes.

REI Three-Month Net Up This Year As 'In-the-Black' Trend Continues

DALLAS – Recognition Equipment, Inc.'s (REI) first-quarter earnings were vastly improved over the year-ago loss of $1.2 million, continuing the trend in the black since the second quarter last year.

Earnings totaled $655,000 or 12 cents a share in the period ended Jan. 31.

Revenues rose to $10.3 million from nearly $6.8 million in the year-ago period.

Last year's first-quarter loss prevented the firm from showing earnings in the half year, but, by nine months, REI earned $1.4 million.

Shipments were up, with the purchase value of equipment shipped for lease and purchase during the first 1975 quarter totaling $6 million compared with $5 million in the year-ago period.

The purchase value of the backlog of firm orders, excluding development contracts, stood at $35.7 million on Jan. 31, up from $26.3 million a year ago.

The first-quarter backlog figure includes $823,000 of OCR wands.

Optical Scanning Revenues Drop In Second Quarter and Six Months

NEWTOWN, Pa. – Revenues declined, and Optical Scanning Corp. showed losses during the six months and second quarter ended Dec. 31.

During the quarter, revenues dropped to $4 million from $5.1 million a year ago while the firm lost $104,081 compared with earnings of $118,942 or 18 cents a share in the same period last year.

In the six months, Optical Scanning lost $168,665 compared with earnings of $150,147 or 23 cents a share in the year-ago period.

Revenues for the half year dipped to $8.5 million from $9.4 million in the 1973 period.

Datran Investor OK'd

WASHINGTON, D.C. – The Federal Communications Commission (FCC) has given Wyly Corp. the green light to land an additional investment of $10 million in its subsidiary, Data Transmission Co. (Datran) by Walter Haefner, a Swiss investor.

Haefner will receive debentures convertible into one million shares of Datran common plus a warrant to puchase 1.3 million shares of Wyly.

Modcomp Income Doubles in '74

FORT LAUDERDALE, Fla. – Revenues and operating income more than doubled in the year ended Dec. 31 at mini-maker Modular Computer Systems, Inc. (Modcomp).

Revenues leaped to $26.1 million from $12.4 million last year.

Earnings totaled $2.2 million or 78 cents a share, including $288,000 in tax credit compared with $1.4 million or 66 cents a share last year, when there was a $664,000 tax credit.

Operating income totaled nearly $2 million compared with $782,000 in 1973.

Earnings Reports

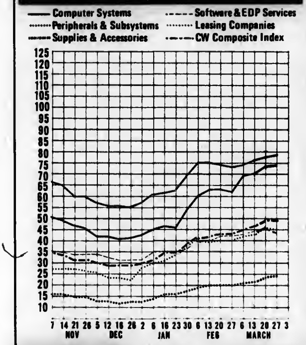
TRACOR
Year Ended Dec. 31

	1974	1973
Shr Ernd	$.75	$2.00
Revenue	94,368,000	78,551,000
Disc Op	a(1,490,000)	257,000
Spec Cred	b1,083,000	c2,633,000
Earnings	1,831,000	4,859,000
3 Mo Shr	.24	.43
Revenue	25,680,000	19,983,000
Disc Op	(494,000)	39,000
Tax Cred	481,000	a532,000
Earnings	577,000	1,045,000

a-Includes $1 million estimated loss on disposition. b-Consists of $1 million tax credit and $150,000 equity in extraordinary gain of affiliates. c-Consists of $2.2 million tax credit and $50,000 equity in extraordinary gain of affiliates, gain of $346,000 on disposition of certain subsidiaries and investments. a-Tax credit of $517,000 and $15,000 equity in extraordinary gain of affiliates.

COMPUTER PRODUCTS
Year Ended Dec. 27

	1974	1973
Shr Ernd	$.19	$.33
Revenue	4,018,481	2,735,749
Tax Cred	.....	156,000
Earnings	214,969	380,712



COMPUTERWORLD Computer Stocks Trading Indexes

CINCINNATI MILACRON
Year Ended Dec. 31

	1974	1973
Shr Ernd	$3.20	$2.62
Revenue	452,784,872	370,770,040
Earnings	a11,777,157	9,879,074
3 Mo Shr	.75	.72
Revenue	117,091,279	b95,123,351
Earnings	2,783,808	b2,858,987

a-Includes net gain of $1,761,862 from sale of assets of a company division. b-Restated.

TYMSHARE
Year Ended Dec. 31

	1974	a1973
Shr Ernd	$.89	$.71
Revenue	46,455,477	35,200,245
Tax Cred	150,000	611,000
Earnings	3,298,283	2,653,971

a-Restated to reflect merger with United Data Centers, Inc. in December 1974 on a pooling-of-interests basis.

WALLACE BUSINESS FORMS
Three Months Ended Jan. 31

	1975	a1974
Shr Ernd	$.68	$.44
Revenue	18,852,000	13,852,000
Earnings	1,273,000	798,000
6 Mo Shr	1.20	.83
Revenue	34,149,000	25,145,000
Earnings	2,234,000	1,501,000

a-Restated.

GENERAL DATACOMM INDUSTRIES
Three Months Ended Dec. 31

	1974	a1973
Shr Ernd	$.14	$.09
Revenue	3,099,959	2,343,605
Tax Cred	83,503	63,302
Earnings	195,575	131,880

a-Amounts other than revenues restated to reflect product development costs expensed as incurred.

BRADFORD COMPUTER & SYSTEMS
Year Ended Dec. 31

	1974	a1973
Shr Ernd	$.53	$.57
Revenue	59,006,000	48,375,000
Tax Cred	103,000	36,000
Earnings	2,129,000	2,330,000
3 Mo Shr	.....	.11
Revenue	16,558,000	11,898,000
Tax Cred	96,000	7,000
Earnings	(606,000)	470,000

a-Restated for acquisition of Canturex Corp. on a pooling-of-interests basis in 1974 and also for retroactive write-off of previously deferred development costs.

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Northern Regional Manager
Robert Ziegel
Account Manager
Mike Burman
COMPUTERWORLD
797 Washington Street
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Phone: (617) 965-5800
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Eastern Regional Manager
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Computerworld Stock Trading Summary

CLOSING PRICES TUESDAY, MARCH 25, 1975

All statistics compiled, computed and formatted by
TRADE★QUOTES, INC.
Cambridge, Mass. 02139

COMPUTER SYSTEMS

EXCH		PRICE 1974 RANGE (1)	CLOSE MAR 25 1975	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	92-109	88 3/4	-5 1/8	-5.4
O	COMPUTER AUTOMATION	2- 14	5 3/8	+ 5/8	+10.8
N	CONTROL DATA CORP	10- 38	15 5/8	- 1/4	-1.5
N	DATA GENERAL CORP	10- 30	21 3/8	-2 1/8	-9.0
O	DATAPOINT CORP	5- 15	14	+1 1/4	+8.8
O	DIGITAL COMP CONTROL	1- 5	1 1/4	0	0.0
N	DIGITAL EQUIPMENT	48-121	84 1/4	-2 3/4	-3.1
N	ELECTRONIC ASSOC.	1- 3	2 1/8	- 1/2	-19.0
A	ELECTRONIC ENGINEER.	4- 11	7 1/8	- 1/4	-3.3
N	FOXBORO	19- 48	28	-2	-9.4
O	GENERAL AUTOMATION	6- 40	8 5/8	+1 5/8	+23.2
O	GPI COMPUTER CORP	1- 2	1/4	0	0.0
N	HEWLETT-PACKARD CO	54- 91	87 3/8	-3 3/4	-4.1
N	HONEYWELL INC	18- 86	30 5/8	-1 5/8	-5.0
N	IBM	152-251	210	-4 3/4	-2.2
O	MEMOREX	2- 5	4 1/2	- 1/4	-5.2
O	MICRODATA CORP	1- 5	2 1/4	0	0.0
N	NCR	14- 40	25 5/8	- 1/8	-0.4
N	PERKIN-ELMER	15- 40	25 1/2	-2 1/2	-8.9
N	RAYTHEON CO	21- 39	32 7/8	- 3/4	-2.2
N	SPERRY RAND	24- 44	33 1/4	-1 1/2	-4.3
A	SYSTEMS ENG. LABS	1- 3	3 3/8	+1	+42.1
O	ULTIMACC SYSTEMS INC	1- 2	3 3/8	- 3/8	-10.0
N	VARIAN ASSOCIATES	9- 13	9 7/8	+ 3/8	+3.9
N	WANG LABS.	7- 20	12 1/8	+ 1/4	+2.1
N	XEROX CORP	50-127	70 1/4	-7 1/8	-8.2

LEASING COMPANIES

EXCH		PRICE 1974 RANGE (1)	CLOSE MAR 25 1975	WEEK NET CHNGE	WEEK PCT CHNGE
O	COMDISCO INC	1- 7	2 1/2	- 7/8	-25.9
A	COMMERCE GROUP CORP	2- 5	3 3/8	0	0.0
A	COMPUTER INVSTRS GRP	0- 4	1	+ 1/8	+14.2
P	DATRONIC RENTAL	1- 1	5/8	0	0.0
A	DCL INC	0- 1	1/2	-	-11.1
N	DPF INC	2- 5	4 1/4	- 3/8	-8.1
O	EDP RESOURCES	2- 3	2	0	0.0
A	GRANITE MGT	1- 3	3 1/8	+ 1/8	+4.1
A	GREYHOUND COMPUTER	2- 6	2 7/8	+ 1/8	+4.5
A	ITEL	3- 5	5 5/8	- 3/8	-5.2
N	LEASCO CORP	5- 12	6 3/8	- 5/8	-8.9
O	LEASPAC CORP	1- 2	3/4	0	0.0
O	LECTRO MGT INC	1- 1	1/2	0	0.0
O	NRG INC	1- 5	2 3/8	- 1/8	-5.0
A	PIONEER TEX CORP	2- 10	2 1/2	- 1/8	-9.7
A	ROCKWOOD COMPUTER	0- 1	1/2	- 1/8	-18.1
N	U.S. LEASING	5- 24	10 1/8	-1 1/8	-10.0

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
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(1) TO NEAREST DOLLAR

SOFTWARE & EDP SERVICES

EXCH		PRICE 1974 RANGE (1)	CLOSE MAR 25 1975	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED CORP TECH	1- 2	3/4	0	0.0
A	APPLIED DATA RES.	1- 10	1 5/8	- 1/8	-7.1
N	AUTOMATIC DATA PROC	21- 57	40	- 1/4	-0.5
O	BRANDON APPLIED SYST	1- 1	1/8	- 1/8	-50.0
O	CENTRAL DATA SYSTEMS	4- 6	3 1/4	0	0.0
O	COMPUTER DIMENSIONS	1- 3	2 1/2	+ 3/8	+17.9
O	COMP ELECTION SYSTMS	3- 4	4 1/8	0	0.0
O	COMPUTER HORIZONS	1- 5	3/4	0	0.0
O	COMPUTER NETWORK	1- 2	1 3/8	0	0.0
N	COMPUTER SCIENCES	2- 4	3 5/8	- 3/8	-8.3
O	COMPUTER TASK GROUP	1- 1	1/2	0	0.0
O	COMPUTER USAGE	2- 4	2 3/4	- 1/2	-15.3
O	COMSHARE	2- 4	3 1/4	+ 1/4	+8.3
O	DATATAB	1- 3	1	- 1/8	-11.1
A	ELECT COMP PROG	1- 1	1/4	0	0.0
N	ELECTRONIC DATA SYS.	11- 25	14 1/8	-1 3/8	-8.8
O	INFONATIONAL INC	1- 2	1/8	0	0.0
O	IPS COMPUTER MARKET.	1- 1	3/8	0	0.0
O	KEANE ASSOCIATES	2- 4	1 3/4	0	0.0
O	KEYDATA CORP	1- 6	3 1/4	0	0.0
O	LOGICON	2- 5	4 1/4	0	0.0
A	MANAGEMENT DATA	1- 2	2	0	0.0
O	NATIONAL CSS INC	5- 37	7 1/4	- 3/4	-8.3
O	NATIONAL COMPUTER CO	1- 1	1/4	0	0.0
R	ON LINE SYSTEMS INC	9- 30	8 5/8	- 3/8	-4.1
N	PLANNING RESEARCH	2- 5	3 3/4	- 1/4	-9.2
O	PROGRAMMING & SYS	1- 1	5/8	0	0.0
O	RAPIDATA INC	1- 5	1 7/8	0	0.0
O	SCIENTIFIC COMPUTERS	1- 1	1 1/8	0	0.0
O	SIMPLICITY COMPUTER	1- 1	1/4	0	0.0
O	TYMSHARE INC	6- 12	10 3/8	-1 3/8	-11.7
O	UNITED DATA CENTER	2- 4	2 7/8	0	0.0
A	URS SYSTEMS	2- 4	2 7/8	- 1/4	-8.0
N	WYLY CORP	1- 5	3 1/4	- 1/2	-13.3

PERIPHERALS & SUBSYSTEMS

EXCH		PRICE 1974 RANGE (1)	CLOSE MAR 25 1975	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	3- 11	6 1/2	- 3/8	-5.4
O	ADVANCED MEMORY SYS	1- 7	3 7/8	+ 1/8	+3.3
N	AMPEX CORP	2- 5	5 1/4	+ 1/4	+5.0
O	ANDERSON JACOBSON	1- 4	2 1/8	+ 1/8	+5.2
O	BEEHIVE MEDICAL ELEC	1- 7	2 1/2	+ 1/8	+5.2
A	BOLT,BERANEK & NEW	5- 9	8 1/8	+ 7/8	+12.0
N	BUNKER-RAMO	3- 8	9 1/2	- 1/8	-1.0
A	CALCOMP	4- 11	5 7/8	- 1/4	-4.0
O	CAMBRIDGE MEMORIES	3- 19	3 7/8	0	0.0
N	CENTRONICS DATA COMP	7- 23	14 5/8	- 7/8	-5.6
O	CODEX CORP	8- 27	25	+ 1/2	+1.9
O	COGNITRONICS	1- 2	1/2	0	0.0
O	COMPUTER COMMUN.	1- 2	5/8	+ 1/8	+25.0
O	COMPUTER CONSOLES	2- 4	3 1/4	- 1/4	-7.1
A	COMPUTER EQUIPMENT	1- 2	1 1/2	0	0.0
O	COMPUTER MACHINERY	1- 5	1 5/8	0	0.0
O	COMPUTER TRANSCEIVER	1- 2	1 1/8	0	0.0
O	CONTEN	1- 5	3 1/8	- 1/8	-3.8
N	CONRAC CORP	10- 22	16 3/4	-2	-10.5
O	DATA ACCESS SYSTEMS	2- 3	2 1/4	+1 1/8	+100.0
O	DATA 100	4- 13	10 1/8	-1 1/8	-10.0
A	DATA PRODUCTS CORP	2- 5	4	0	0.0
O	DATA TECHNOLOGY	1- 4	1 7/8	0	0.0
O	DATUM INC	1- 4	1 1/4	0	0.0
O	DECISION DATA COMPUT	3- 13	4 5/8	- 1/8	-2.9
O	DELTA DATA SYSTEMS	1- 2	1/2	+ 1/8	+33.3
O	DI/AN CONTROLS	1- 2	3/4	0	0.0
N	ELECTRONIC M & M	1- 4	2	- 1/8	-5.8
O	FABRI-TEK	1- 3	1	- 1/8	-11.1
O	GENERAL COMPUTER SYS	1- 4	1 1/2	0	0.0
N	HAZELTINE CORP	2- 7	3 3/8	- 1/2	-12.9
N	HARRIS CORP	13- 34	19 3/8	-1	-4.9
A	INCOTERM CORP	1- 9	3 3/4	+ 3/4	+25.0
O	INFOREX INC	1- 5	3 3/8	- 3/4	-18.1
O	INFORMATION INTL INC	6- 14	10 5/8	- 5/8	-5.5
A	LUNDY ELECTRONICS	3- 3	2 7/8	0	0.0
O	MANAGEMENT ASSIST	1- 1	3/8	- 1/8	-25.0
A	MILGO ELECTRONICS	5- 18	12	- 1/2	-4.0
N	MOHAWK DATA SCI	1- 4	1 7/8	- 3/8	-19.6
O	ODEC COMPUTER SYST.	1- 3	1	+ 1/4	+33.3
O	OPTICAL SCANNING	2- 5	2 1/2	+ 1/2	+25.0
O	PERTEC CORP	1- 9	5 3/8	+ 3/4	+16.2
A	POTTER INSTRUMENT	1- 5	1 3/4	0	0.0
O	PRECISION INST.	1- 3	3/4	- 1/4	-25.0
O	QUANTOR CORP	2- 8	4 1/4	- 1/4	-5.5
O	RECOGNITION EQUIP	2- 5	4 1/8	+ 3/8	+10.0
N	SANDERS ASSOCIATES	2- 8	4 3/4	- 3/4	-13.9
O	SCAN DATA	1- 2	1 1/8	+ 1/8	+12.5
O	STORAGE TECHNOLOGY	6- 15	9	- 1/2	-5.2
O	SYCOR INC	4- 13	7	- 1/4	-3.4
O	TALLY CORP.	1- 4	1 5/8	- 3/8	-18.7
O	TEC INC	1- 7	2 1/2	0	0.0
N	TEKTRONIX INC	18- 48	25 5/8	-2 7/8	-9.7
N	TELEX	1- 4	2	- 1/4	-11.1
O	WANDCO INC	3- 13	3 3/4	0	0.0
O	WILTEK INC	1- 8	2	- 1/2	-20.0

SUPPLIES & ACCESSORIES

EXCH		PRICE 1974 RANGE (1)	CLOSE MAR 25 1975	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	4- 6	5	0	0.0
A	BARRY WRIGHT	4- 7	5 3/4	- 5/8	-9.8
O	CYBERNATICS INC	1- 2	5/8	0	0.0
R	DATA DOCUMENTS	23- 54	39	-1 1/8	-2.8
O	DUPLEX PRODUCTS INC	9- 22	18 1/8	-1 3/8	-9.7
N	ENNIS BUS. FORMS	4- 7	6	- 3/8	-5.8
O	GRAHAM MAGNETICS	5- 11	8 3/4	+1 1/4	+16.6
O	GRAPHIC CONTROLS	5- 14	14	+ 1/2	+3.7
N	3M COMPANY	43- 79	51 1/2	-2 3/8	-9.4
O	MOORE CORP LTD	33- 57	43 1/2	-3	-6.4
R	NASHUA CORP	15- 45	16 7/8	-1 1/4	-6.9
O	REYNOLDS & REYNOLDS	5- 35	19	+1 1/2	+8.5
O	STANDARD REGISTER	10- 17	15 1/2	+ 1/4	+1.6
O	TAB PRODUCTS CO	4- 11	9	0	0.0
N	UARCO	13- 23	17 5/8	-1 1/2	-7.6
O	VANIER GRAPHICS CORP	3- 4	4 1/4	+ 1/4	+6.2
A	WABASH MAGNETICS	3- 7	4 1/8	0	0.0
N	WALLACE BUS FORMS	14- 24	20 1/2	+ 3/8	+1.8

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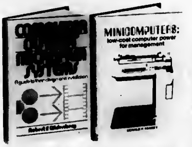

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